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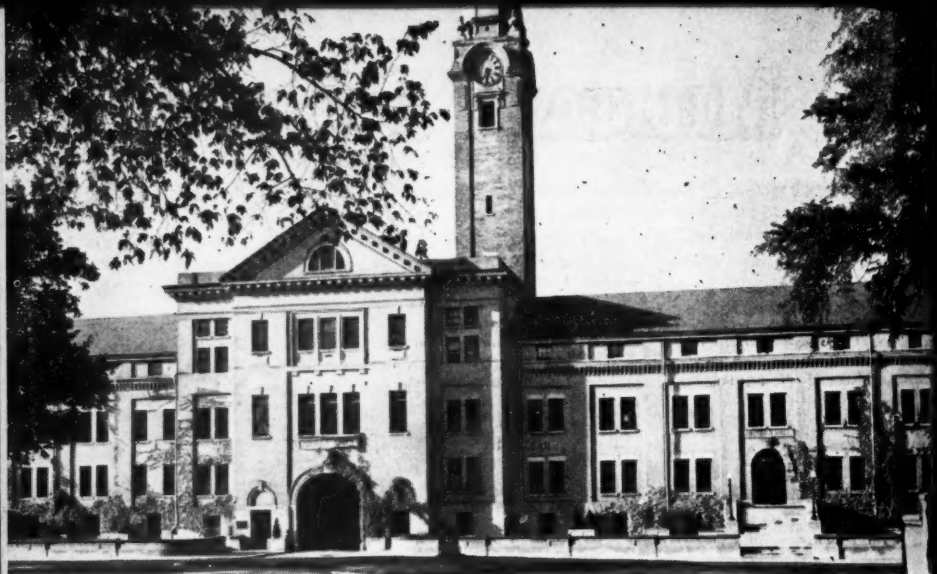
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# Major Problems Confronting A THEATER COMMANDER In Combined Operations

General Jacob L. Devers  
Commanding General, Army Ground Forces

*General Devers presents here, from a background of wide experience, a significant article on the varied problems which confront a Theater Commander in combined operations. Before assuming his present command as Commanding General, Army Ground Forces, General Devers served successively as Chief of the Armored Force, Deputy Supreme Allied Commander in the Mediterranean Theater of Operations and Commanding General of United States Forces in the North African Theater of Operations, Commanding General of the European Theater of Operations, and Commanding General of the 6th Army Group.—  
The Editor.*

**T**HE problems presented a Theater Commander in combined operations, that is, those which involve unified employment of one or more armed services of two or more allied forces, are, in the main, no different in character from those presented a Theater Commander in joint operations; that is, those conducted on land and/or sea which involve employment of two or more of the armed services of the United States.

However, their scope and detail are an entirely different matter, and they tax his native ability, professional skill, and

patience to an unbelievable degree. For this reason alone, a Theater Commander charged with conducting combined operations must be possessed of unquestioned ingenuity, professional skill, tact, good judgment, and patience.

In listing only the principal major problems that will confront a Theater Commander in combined operations, I would arrange them in this order:

(1) Characteristic lack of clarity and firmness of directives received from the next superior combined headquarters or authority.

(2) The conflicting political, economic, and military problems and objectives of each of the allied powers.

(3) The logistical capabilities, organization, doctrines, and characteristics of each of armed forces under command.

(4) The armament, training, and tactical doctrines of each of the armed forces under command.

(5) Personal intervention and exercise of a direct, personal influence to assure coordination and success in the initial phases of the mission assigned by the next higher combined authority.

Lastly, and in the final analysis probably the most important of all:

(6) The personalities of the senior commanders of each of the armed services of the allied powers under command, their

capabilities, personal and professional habits, and their ambitions.

I will attempt to deal with each of these in order.

(1) *Characteristic lack of clarity and firmness of directives received from the next superior combined headquarters or authority.*

The first task of the Theater Commander upon receipt of a directive from the next higher commander or authority is, of course, to arrive at its correct, sound interpretation, in the light of the conditions under which the directive was issued, and in the light of the conditions existing in the theater at the time of its receipt. It must be remembered that the next higher command, which in the recent war was the Combined Chiefs of Staff, arrived at this directive after going through at least all the mental processes that the Theater Commander must now go through, and after taking into account matters of no personal concern to the theater. The Theater Commander must remember that this directive is the result of a prior complete analysis, at the Combined Chiefs of Staff level, of the peculiar problem which will confront both them and the Theater Commander in its execution.

Only in the exceptional case will a clear-cut, uncompromised directive be arrived at at that level. Each member of the Combined Chiefs of Staff must and will, of necessity, look first to the political, economic, and military problems and welfare of his own nation.

Thus, from the outset, we find that there will be conflicting views, not only as regards the basic strategy of the war, but also to its implementation, even in its broadest aspects. Hence, the directive received by the Theater Commander will invariably be extremely broad in all of its aspects, except as to its ultimate objective.

An example of this is the initial, but brief, conflict of views regarding basic

strategy in World War II—whether the German or the Jap would be the first target. The ultimate decision, of course, was that Germany would be destroyed first. However, once this basic strategy was determined, there then arose an immediate conflict as to the direction to be taken and the front of the main theater for the overrunning of Germany.

The *timing* of the main blow was also an extremely difficult decision to arrive at. Original dates discussed ranged from spring of 1943 to summer of 1945. Equal difficulty was experienced by the Combined Chiefs of Staff in reaching a final decision as to the location and direction of the principal secondary attack against Germany. In August 1943, it was decided tentatively that the principal secondary attack would be launched against the south of France. By early November 1943, this tentative agreement was practically abrogated in favor of the Balkan area. The requirements of China, Burma, and the Pacific also added to the state of indecision, even raising the question of the possibility of any secondary attack.

But in late November 1943, it was again decided that the secondary attack would be against the south of France, and a final directive to this effect was issued to the Mediterranean Theater Commander.

It is such indecision and lack of clear-cut, firm direction from the next higher combined level that causes a Theater Commander in combined operations his first greatest concern, for, manifestly, no commander can plan or make decisions with any degree of assured firmness without comparable firmness and a clear-cut decision from the next higher level. History records that this has been too much to expect in the past, and, nations and human beings being what they are, the future can hold no prospect for improvement.

(2) *The political, economic, and military*



*policies and objectives of each of the allied powers.*

In determining his appropriate course of action under a directive received, the Theater Commander must bear in mind that he has under command professional soldiers and experienced commanders of several nations other than his own, who owe their first allegiance to their own governments and to the views of their own National Chiefs of Staff. It is only natural that representatives of another nation will examine critically every directive received and decision taken by the Theater Commander, from the viewpoint of their own national aspirations—political, economic, and military. No two nations will have aspirations so similar as to develop no conflicts of views.

Allied forces in war will accept the common, broad objective without question, which is, of course, the destruction of the hostile power. When the question of ways and means and methods arises, however, national aspirations and characteristics come to the forefront. This is not only true of men at the highest political level, and of the pillars of the national economic structure, it is a natural trait of professional military men, because it has been ingrained in them from the very beginning. Hence, if it is too much to expect at the political level, and at a Combined Chiefs of Staff level, that the representatives of two or more nations will agree from the outset on more than the broadest aspects of the solution to a problem, it is likewise unreasonable to expect that the military representatives of nations who are serving under unified command in combined operations will subordinate promptly and freely their own views to those of a commander of another nationality, unless the commander, through professional skill, good judgment, tact, and patience, has convinced them that it is to their national interests individually and collectively.

Hence, the Theater Commander must first know the several national problems and aspirations in detail before he can hope to deal with his commanders. It must be thoroughly appreciated by him that no commander, regardless of the position he may occupy in the world of allied powers, will submerge his national pride and aspirations for what appears to be the benefit of another. Some compromises will be arrived at through diplomacy. The Theater Commander, in order to secure the whole-hearted cooperation of the armed forces of another national, must take this into account.

The greatest example of this in the recent war was the long conflict between American and British views at all levels, political and military, over the Balkans as a principal or secondary route of approach to the heart of Germany. It apparently was the British conviction that her economic and political future was so closely bound to the Balkans by history and by their proximity to the British lifeline through the Mediterranean, that this was the only route wholly acceptable to the British Commonwealth of Nations.

On the other hand, the Americans, at political and military levels, would not agree to this route. The British and the Americans were in complete accord that the ultimate objective was the destruction of the German war machine, but there was a great divergence of opinion on intermediate objectives and routes. It was our view that overrunning of Silesia by the Russians and overrunning of the Saar and the Ruhr from the west were the proper intermediate objectives. These three objectives having fallen, the total collapse of Germany was then assured. The shortest approach to the Saar and the Ruhr was through France. An approach from the Balkan area would be a long, torturous route, which would only be negotiated at great expense in time, effort, and manpower.

Some may charge that British insistence upon the Balkans was based solely upon political and economic motives. Such a charge cannot be supported by sound-thinking military men. British adherence to this view, almost to the very end, was as sound in the light of British national policy and military strategy as was the

have been an early intermediate objective of our Joint Chiefs of Staff. For, after all, a true military, early objective of any operation is that which will contribute most rapidly and completely to the *ultimate* political, economic, and military security of the nation, and thus to national morale that may be fading.



Scuttled ships formed a breakwater for vessels unloading on the beach of Northern France during the combined operations for the invasion of the European Continent. (AAF photo.)

American view regarding the direct approach to the Saar and the Ruhr. These two conflicts did not result from national prejudices, but from national concepts.

Had the early security of the Balkans been of such importance to the political and economic future and to the military security of the United States as to the British Commonwealth of Nations, there is little doubt that the Balkans would

Although I have no first-hand knowledge of the facts, it appears obvious that it was the view of the United States Joint Chiefs of Staff that if the Saar, the Ruhr, and Silesia were overrun, the Balkans would be freed without the necessity of an expensive military campaign, and thus insure the future security, political, economic, and military, of the British Empire in the Mediterranean area. It also appears

obvious that the British Chiefs of Staff must have agreed, finally to that view.

These conflicts of view were just as present amongst military men of the combined armed forces in the Mediterranean as at the Combined Chiefs of Staff level; however, they did not adhere entirely to national lines. There were some on the British side who felt just as intensely as did the Americans that the main blow must come through western France, and the secondary blow through the south of France. On the other hand, there were some on the American side who felt that the main blow must come through western France and that the secondary effort must come through the Balkans and northern Italy.

The French, who were now allied with the British and the Americans, wanted none of the Balkan or the Italian approach. They were only willing to operate in Italy until the time and opportunity arrived for the invasion of southern France. It cannot be charged that any of these individuals were insincere. They were experienced professional men and were intensely loyal to their Theater Commander and to their own national government.

When these conflicts of opinion, however, extended to the senior commanders of the armed services of the Allied powers involved, the Theater Commander was confronted with the most delicate problem of reconciling all of them to his own views, in order that he might establish complete harmony in his official family for pursuit of the ultimate decision.

The Theater Commander may be conducting operations within the territory of a sovereign nation other than his own, in areas whose laws and customs are other than those of the nationality of the Theater Commander. This presents peculiar problems, especially if the government of the area in which operations are being conducted is one of the allied powers.

While the pursuit of the campaign must,

of necessity, have paramount interest over the wishes of the friendly populace of another nation, their wishes, their customs, habits and characteristics must receive an especial consideration by the Theater Commander, in order that complete harmony may exist in rear areas. Under no circumstances can he give the impression that these factors are being subordinated by him to the demands of the military situation.

Actually, of course, this is what he must do, but the view of the friendly civilian populace must be one which reflects an understanding that the conduct of the campaign in their territory first takes them into account. The Mediterranean Theater Commander spent a great amount of his time with French, North African, and Italian problems, while General Eisenhower was beset by hundreds of problems peculiar to France, Belgium, Holland, Luxembourg, and England. This, of course, comes within the field of diplomacy and public relations.

To assist him in the solution of the peculiar problems presented by directives received; by the military, political, and economic objectives of the various allied powers; and by the local populace of one or more of the allied powers, the Theater Commander invariably employs two agents, a purely military one and a political/economic one, each of which operates separately, but always in close collaboration with the other.

The military agency is most frequently referred to as a "Joint Planning Staff." Although this planning staff deals with combined operations, it is referred to as a "Joint" Planning Staff because from their viewpoint all operations are joint. This staff should be composed of only one senior representative of each of the armed services of the principal powers involved, and a member from each principal combined staff section. When problems are presented which affect directly a lesser

power, one representative of the armed services of this lesser power must also sit in on the deliberations of that body.

It is the duty of this staff to examine for and present to the Theater Commander all the political, economic, and military implications of all directives and proposals received, and submit recommendations thereon, whether the proposal originates at a higher level, at the theater level, or at a lower level. During its deliberations, the Joint Planning Staff must utilize fully the other agency of the Theater Commander in an advisory capacity.

The second agency of the Theater Commander is the group of political and economic advisors made available to him by the various allied powers. The political advisors are, most frequently, career men of the diplomatic service. The economic advisors are also specialists in that field. This group the Theater Commander frequently refers to as his "Political-Economic Advisory Group," or committee. When any problem involves political and economic considerations, this committee acts as advisors to the Theater Commander. When the problem is purely military, but has political and economic implications, this group not only sits with and advises the Joint Planning Staff, it should prepare a separate report of its own on the political and economic implications for the Theater Commander, and make appropriate recommendations to him.

(3) *The logistical capabilities, organization, doctrines, and characteristics of each of the armed forces under command.*

Having determined the appropriate course of action from a detailed analysis of the first two principal problems, the Theater Commander is now confronted with the task of deciding how and when he will commit his combined forces against his assigned objective. It has been said by many great leaders that they always

took at least five looks to their rear for every look to their front. It may well be said that a Combined Theater Commander may well take five looks to the logistics of each of the armed services of each of the allied powers under command for each look he takes to the front.

While in the main the difference in tactical concepts can always be adjusted between the various armed services locally, the opposite is true of administrative and logistical concepts. No two powers entered the last war with the same logistical and administrative doctrines. The personnel logistics of each of the armed services of the various allied powers present a different problem, over which the Theater Commander can exercise little or no control except in the case of those armed services belonging to his own nation.

The personnel of the various powers will be governed by different civil and military laws and customs. Their administrative processes and disciplinary procedures are peculiar to the characteristics of the nation concerned. The administration, therefore, of personnel problems, except the provision of replacements and overseas evacuation of casualties, cannot be subject to formalized combined procedures. The Theater Commander can exercise no authority over the procedures of nationals other than his own, except such as he is able to exercise through his own personality and through "gentlemen's agreements" with his senior subordinate commanders. The provision of replacements and evacuation of casualties, however, while they will be carried out according to national policies and military procedures, are subject to formalized combined procedures, for the reason that they involve the employment of combined resources. It is the adjustment of these resources to the demands of the situation and to the capabilities and requirements of the various allied commands that is

of primary concern to the Theater Commander. Hence, broad policies governing these matters are agreed, prescribed, and administered at the combined level in dealing with personnel. The details of these matters, however, and other general personnel administration, must remain the problem of the senior commander of the armed forces of the allied powers under command.

What has been said of personnel logistics is true to a greater degree of supply and maintenance logistics. While basic decisions regarding supply and maintenance logistics are certainly the province of the Theater Commander, detailed implementation of these basic decisions must remain a prescription of the senior commander of the armed forces of the allied power concerned.

The allocation of available supplies, regardless of source, is, of course, a prerogative of the Theater Commander. It would be fallacious to say that a Theater Commander could not take the supply and maintenance resources of the armed services of one nation under command and apply them to another where needed, according to the demands of the campaign.

Hence, basic decisions regarding amounts, kinds, times needed, and ultimate disposition of supply and maintenance resources are subject to combined procedures. It is the technical implementation of these decisions that presents a serious problem to the Theater Commander, because of the various methods employed by the various armed services.

No two will use the same procedures, for the reason that the initial basic training, and training during peacetime, have been that best adapted to the national habits and customs, and to practices of the Zone of Interior establishments of the nation concerned. The local technical and administrative procedures of supply

and maintenance logistics of each of the nations will be so closely related to procedures in the Zone of Interior establishments, and to civilian industrial capacity, that rearrangement in the theater of national procedures, in order to establish a common system among the armed forces of all nations is an impossibility. To attempt such a rearrangement would have far-reaching effects, all the way back to the Zone of Interior, which might prove disastrous.

The Theater Commander, therefore, must rely largely upon his senior commanders for correct local supply and maintenance procedures, and concern himself actively with those features of logistical support over which he can exercise a direct influence.

He is principally concerned with the capacity of each of the armed services of the allied powers involved to maintain itself in accordance with standards commensurate with its own combat requirements, and with the overall demands of the campaign. He must not limit the operational capabilities of the armed services of any of the nations involved by the arbitrary diversion of its logistical support to the armed services of another nation, unless the tactical situation clearly demands this action.

For example, in the early fall of 1943, two French divisions were ready and available for employment in Italy. The Theater Commander had promised the senior French authority in North Africa that these two divisions would be committed to the battle at the earliest possible moment. During late September and early October, the French brought great pressure to bear upon the Theater Commander to transport these divisions and a French corps headquarters to Italy without further delay.

The Theater Commander must have been sorely tempted to accede to the French

request, not only for the sake of French national honor and to give a strong boost to French morale and pride, but also to meet his commitment without further discussion. Also, from a purely selfish point of view, it would have been a wholly acceptable solution; for with two French divisions in the battle, we could have conserved British and American lives and energy.

On the other hand, General Montgomery and General Clark were sorely in need of more of their own supporting troops and were sorely in need of firmly-established supply bases behind their battlefronts. Had the French insistence been acceded to at this time, sea transportation, which was then critically short and which was sorely needed for the movement of supplies and reinforcement troops to Generals Montgomery and Clark, would have had to be diverted to the movement of the French divisions.

These transportation resources belonged to the British and the Americans, and despite the fact that they would have welcomed this French corps in the battleline with open arms, they would have resented bitterly a decision to move these two French divisions to the Italian mainland, at the expense of their commands during such a critical period.

Also, the French were armed and equipped by the United States, from whose resources they drew their supplies and maintenance at this time in the Mediterranean Theater with respect to several critical items were hardly sufficient to maintain General Clark's army in a proper state of battle efficiency, despite the fact that the critical supplies were being moved to him from the United States, North Africa, and Sicily as rapidly as possible by sea and by air.

The Theater Commander and his senior commander in Italy fully appreciated that if the French were committed to the bat-

tle now, not only would it mean the diversion of shipping space which should properly support the British and American armies in Italy, it would also mean the diversion of critical items of supply from General Clark, at a time when he sorely needed more than could possibly be made available to him.

Thus, in reaching this decision to withhold the French from the battle until late fall and early winter, the Theater Commander subordinated his desire to commit the French as early as possible, and thus meet his commitment to the French high command, to the cardinal principle of refraining from diverting support from the resources of one national to the armed services of another, unless availability makes such action wholly feasible or the tactical situation clearly demands it.

It is a special function of the Joint Planning Staff, which contains representation from the senior logistics officer on the staff of the Theater Commander, to keep the Theater Commander advised on such matters. In such cases as this one, political advice should also be furnished the Theater Commander by the Political-Economic Advisory Committee, for it may be found that purely political considerations may require the violation of a cardinal military principle.

(4) *The armament, training, and tactical doctrines of each of the armed forces under command.*

The organization, armament, training, and tactical doctrines of the armed forces of the several allied powers will present several special problems not ordinarily found in a joint theater, which are closely related to the subject of logistics. Due to the presence of the armed forces of several nations, the organization and armament of each will have personnel, supply and maintenance implications which have been mentioned, and other implications



which must be given special consideration. This is especially true if the organization and equipment of the various services differ to any marked degree.

For example, similar weapons of even slightly different caliber found in the armed forces of the various nations will

determined on an overall basis, but must be determined on a national basis.

This affects, of course, the Theater Commander's ability to employ freely the forces of a particular nation in an operation, and may compel him to commit forces which he had hoped to reserve for another



Planes of the 12th AAF Troop Carrier Air Division dropped men and supplies on the beachhead between Nice and Marseilles during the combined operations for the invasion of Southern France. (AAF photo.)

positively preclude the diversion of ammunition from the supply channel of one to that of another.

This may prove especially embarrassing in a crisis. The Theater Commander must be constantly apprised of such situations, in order that appropriate balances may be maintained in the theater level of supply. It is obvious that a theater level of supply for such items cannot be

task, in order to insure that his overall level of ammunition and other supply for a particular battle or campaign remains sufficient to meet demands. This, of course, affects directly every decision on the organization of his combat forces for a battle or campaign.

The training of all forces turned over to a Theater Commander is, in theory, that required for the performance of

their normal task. In actual practice, however, this is not the case, because of the basic doctrines of the armed service of the nation concerned. The Theater Commander may then be confronted with the problem of withholding troops of a particular nation from the battle, because of their training doctrines and training level, until they have been brought up to a standard necessary to meet his own personal requirements, and the requirements of the special type of combat in which engaged.

Tactical doctrines of an allied force, if not taken into account prior to decision, will present some awkward if not dangerous situations, particularly in the opening phase of a battle, on a new or stabilized front, and during those phases of battle wherein the front has become fluid and exploitation is being conducted. Differences in tactical concepts will be relatively unimportant during intermediate phases. It is during the periods of initial collision and of exploitation that the Theater Commander will be confronted with possible danger.

So long as we have military men, we will have differences in doctrine. For example, the doctrine of one nation's army, or the view of the local leader of that nation's army, will be that the attack must be opened with a long, heavy, artillery and air bombardment; that of another will be that the preparation fires should be brief, violent, and only be placed on selected portions of the front; while that of another will be that there should be no preparation fires whatsoever, and that all such fires should open concurrently with the infantry or armored attack.

It may be claimed this lies within the field of conduct of battle, which is outside the province of the Theater Commander. This is true. Decisions regarding preparatory fires are usually made at

army group and army levels. It must be remembered, however, that the Theater Commander is charged with the objective, direction, and general location of the main attack and principal secondary efforts. In selecting these and in the allocation of forces, he must taken into full account the fact that he may have to assign to the same mission the forces of two nations who may hold irreconcilable, conflicting views on this important matter.

The Theater Commander *must* take into account in the organization of his forces for an operation or campaign, *the conduct of the initial onslaught*, when the forces are composed of two or more nations. For example, American and British views regarding the initial action of assault waves after they strike the beach in an amphibious operation are opposed to each other, yet it cannot be said that either view is wrong.

It is possible, however, that should one British division and one American division execute an assault landing *in immediate proximity to each other*, the methods employed by one under conditions favorable to the enemy could seriously hamper the operations of the other, if not, in fact, contribute to its destruction. This latter thought is a personal view. This situation is pointed out, however, as one that must be taken into full account by a Theater Commander in organizing his forces for an amphibious assault, and if it is found necessary to accept this risk, all steps possible must be taken by him beforehand to lessen the dangers.

The Theater Commander must understand fully the methods employed by his various armed services during an exploitation phase of operations. Even in the armed forces of one nationality you find the four categories of training and leadership; one that exploits according to normally-accepted, orthodox standards; one

that exploits with a dash and élan described as recklessness; and one that exceeds it.

Within the armed forces of various nations, we find these same characteristics present in varying degrees; the forces of the one will be classified as cautious, the forces of another classified as orthodox, and the forces of a third classified as reckless. Obviously, the Theater Commander must exert his personal influence during crises of battle to secure greater speed on the one hand, and to insure his security and tactical integrity on the other.

*(5) Personal intervention and exercise of a direct, personal influence to assure coordination and success in the initial phases of the mission assigned by the next higher combined authority.*

Another problem of utmost importance which confronts a Theater Commander in combined operations is that of insuring personally complete coordination in an operation which involves the combined employment of several armed services of the various nations against a single objective, and wherein early success initially is essential to the mission. An example of this is the combined operation undertaken by Field Marshal Lord Henry Maitland Wilson along the Riviera east of Toulon.

The theater plan for this operation was broken down into its component parts, the ground, air, naval and logistical phases. The development of these plans into a detailed, integrated, coordinated, unified whole for the assault was left to the principle Task Force Commander until the task was almost completed. This operation involved the combined employment of strong elements of the British Navy, the American Navy, and the French Navy; strong elements of the American Air Forces, the Royal Air Force, and the French Air Force; and three United States divisions, a combined British and

United States airborne division, and two and one-half divisions of French troops composed of approximately five nationalities in the assault and support landings.

The initial task of this force was to secure a beachhead on a front of approximately thirty miles on the French coast. Obviously, conflicts of tactical and technical doctrines will appear in their most dangerous and obvious forms in this type of operation. The final decision as to the exact places of landing; as to the exact target and hour of the airborne assault; as to the exact hour of the beach assault; and as to the exact timing and location of the air and naval bombardments, assumed an importance of the greatest magnitude.

The complete coordination of all possible conflicting ideas was imperative. Absolute coordination of naval air fires with each other and with the airborne assault and with the beach assault had to be assured. The Theater Commander fully appreciated this, and at the appropriate time assumed complete personal charge of final, detailed arrangements for all these matters.

Although the operation was under a Task Force Commander, the Theater Commander refused to saddle his Task Force Commander with a responsibility which he felt was his own, the establishment of complete harmony and agreement between so vast a number of dissimilar armed services and principal commanders, for so vital a task. This the Theater Commander accomplished in a most magnificent manner and to the satisfaction of the Task Force Commander and all the principal subordinates, through the tactful and patient application of his own knowledge, professional skill and ingenuity in executive planning conferences which extended over a period of about two weeks. The importance of the personal assumption by the Theater Com-

mander of his vital responsibilities in operations of this character cannot be overly emphasized.

(6) *The personalities of the senior commanders of each of the Armed Services of the Allied powers under command, their capabilities, and their ambitions.*

The last of the major problems confronting the Theater Commander in combined operations is not peculiar to these types of operations, nor is it the last one to be considered. It is, in fact, a most common one and is his first concern. As is the case in any military command, this problem is the complete analysis and understanding of the characteristics, capabilities, personalities, ambitions, and personal and professional habits of his various senior commanders.

A complete understanding of this problem is the very essence of successful leadership. Not only must the commander know these peculiarities of his principal subordinates, he must thoroughly understand the methods of approach which will secure from them their unstinted loyalty and cooperation in every endeavor. Each of the major problems previously discussed can only be solved in the light of the solution to this last problem.

When a Theater Commander has under command only his own nationals, problems presented by recalcitrant and temperamental subordinates are very simple of solution. He can, if he so elects, exercise his prerogatives of command unreservedly. On the other hand, the first task of a Theater Commander in combined operations must be to establish complete harmony with and between the various personalities of the senior commanders of the services of the various nations under command.

Only in extreme cases can he resort to the expedient of seeking a replacement for a difficult commander of another nationality. Hence, he must devote a

major portion of his time to this problem from the outset. The Theater Commander will frequently be compelled to accept less desirable solutions to tactical and logistical problems in order to secure that complete harmony which is so essential among commanders in the successful pursuit of a campaign.

It is not proposed that in following such a policy that a Theater Commander should compromise his own integrity or his own professional knowledge and skill. It is simply a question of determining which is the most important to insure successful conclusion of the battle, minor compromises in order to establish an essential harmony, or the adoption of a totally uncomprising attitude, thereby risking the establishment of ill will amongst the armed services and between the nations who must fight his battle.

The most important feature of this subject is complete understanding on the part of the Theater Commander of how to secure from his subordinates what is desired. He must know beforehand the general feeling of his principal subordinates regarding a possible proposal. This extends not only to the Theater Commander in his relations with his next principal subordinates, but down into lower levels.

One well-known commander invariably used a very unique method, although he was not a Theater Commander. If this commander had a principal subordinate whose feelings regarding an operation were not known to him beforehand, or if he suspected they would conflict with his own, he invariably followed the practice of conveying to his subordinate personally or through one of his staff officers the possibility that such an operation might come up for consideration.

During the discussion, this commander or his staff officer would develop the subject and lead the principal subordinate

into the channel of thought desired, and in a manner so subtle that the subordinate would usually be in the senior commander's office within forty-eight hours suggesting the desired action as his own idea.

In this paper, I have attempted to outline only in broad relief some of the major

problems which confront a Theater Commander in combined operations. There are many others which warrant discussion, each of such importance that it would be possible to write a separate study on it, as well as on the six major problems treated here.

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Our Army feels great pride in the Normandy assault. So must the Navy and our British Allies. The Navy's mission was to transport the troops across the Channel, to land them properly on the beaches, and to support the landings with guns and rocket fire. If the Allied navies had not performed this task brilliantly, the invasion would have failed before it was well begun. The combined planning of British and American staffs, working together as a single team with excellent knowledge of enemy dispositions resulted in precise execution of an operation so complicated that it almost defies description; its success must be attributed in great measure to wholehearted Allied cooperation, as well as to the stout hearts and fearless courage of the men. The destruction of rail and road communications by the air forces and their constant strafing of the highways continued to prevent the enemy from concentrating a superior force against the beachhead.

*General of the Army George C. Marshall*

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Total victory was the product of unity—a unity achieved by people and by Nations, all guided by the truth that attainment of great common objectives requires sacrifices by each of the participants. In the face of danger individual advantage was glad to bow to the common good.

*General of the Army Dwight D. Eisenhower*

# Strategic Intelligence

## — *An Introduction*

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**I**N the past, the vast industrial potential of the United States, in the form of peacetime factories available for conversion to the manufacture of weapons and war equipment, has been a brake upon aggression against us. The continental isolation of our country further enhanced our security. But today the picture has changed somewhat and is changing further. Our splendid isolation is disappearing in a modern world of rapid communications and shrinking distances. New weapons, of longer range and more deadly than any we have known, are being produced. The effect of these scientific and technological advances has been to remove from us a "time-cushion"—a period at the commencement of hostilities when we, as a nation, might count upon others to absorb the initial shock of war while we complete our preparations for defense. No such interval for the realization of potential strength will exist in future conflicts. In the event of aggression against us, it may be difficult to preserve even beyond the first day those factories devoted to the most essential war production. This observation points up all too forcefully the necessity for dispersion, for stockpiling, and for countless physical security measures. A cool and realistic recognition of things as they are also points up the vital necessity for having complete prior knowledge of possible foes, their capabilities and intentions.

### The Need for Intelligence

International relations are developed as the various nations of the world pursue their sovereign interests. The nature of those relations, whether they shall be good or bad, whether they shall result in open warfare or continue peaceful, is based upon the war-making capabilities and upon the intentions of nations. If a country should desire (a) to defend itself efficiently against any threat to its security, or (b) to pursue unavoidable hostilities to eventual victory with minimum losses, that country must first provide itself with complete, accurate, and timely knowledge of the capabilities and intentions of all powers, both singly and in combination, with which it may be dealing. In addition to knowledge of the capabilities and intentions of other nations, any country, in order to be adequately equipped from the intelligence point of view, must know the physical character of all possible theaters of operations.

### Strategic Intelligence Described

Strategic intelligence may be described as the end-product of the skillfully directed collection and processing of information designed to provide a complete, accurate, and timely knowledge of the overall war-making capabilities and intentions of nations, and of the physical character of all possible theaters of operations.

There is no justification for assuming that strategic intelligence is unique or a



thing apart from combat or tactical intelligence. Insofar as the Armed Forces and the nation are concerned, both should be regarded as categories of the larger subject: Military Intelligence. Tactical and strategic intelligence are different largely only in their scope and point of view, and upon the basis of use to which each is put, or the level at which either is utilized.

Combat or tactical intelligence is produced almost exclusively in the field in time of war, and is limited in scope to a comparatively local situation: the enemy forces opposing a command in combat, and the terrain and weather as they affect the accomplishment of the mission of the command. Combat intelligence is used by all tactical commanders charged with the responsibility for making operational decisions. It is characterized by speedy collection, processing and use of its subject matter.

Strategic intelligence, on the other hand, is produced continuously both in peace and in war. As has been intimated, it is not limited to a local situation, but is concerned with all the factors which contribute to the war-making potential of entire nations, and allied groups of nations. Strategic intelligence, having developed the capabilities of nations under study as a first prerequisite, goes further to arrive at a determination of the intentions of these nations based upon indications which become apparent through the study and analysis of certain strategic factors. Unlike combat intelligence, strategic intelligence is seldom characterized by the speed with which it is produced.

#### Users of Strategic Intelligence

Strategic intelligence finds its greatest uses by national leaders charged with the responsibility of formulating and implementing the foreign policies of a country. The value of strategic intelligence in this connection is quite obvious. Before a nation's leaders can determine the nature, direction, and emphasis of their own

policies, they must be appraised of the capabilities and intentions of all countries with which they deal.

The same thing may be said of those national leaders, both civilian and military, who are charged with national security. Here, knowledge of the capabilities and intentions of foreign powers must lead to the most economical and effective employment of one's own resources, and will permit preparation of adequate counter-measures where such action seems indicated.

Scarcely less prominent users of strategic intelligence are those high military leaders whose responsibility it is to plan long range, large scale operations, and who, in the event of war, use strategic intelligence as the basis for waging total war with such vigor and effectiveness as to insure victory with minimum losses, both human and material, in a minimum length of time.

Finally, the influence of strategic intelligence is felt by the commanders of all echelons, not only as a basis for training programs, but as a basis for tactical intelligence estimates and, in turn, for plans and operations.

#### Capabilities and Intentions

The subject matter of strategic intelligence should be considered from two points of view: the determination of the capabilities of nations in peace and in war; and the determination of their intentions. The estimate of capabilities will be based upon such considerations as resources of all kinds; political stability, character and stamina of peoples; the extent and success of scientific research and development; everything in connection with armed forces; and upon a detailed study of the topography of certain geographical areas, including individual countries and those regions in which each may have interests.

With respect to the intentions of nations, we may seem to veer away from the principle that intelligence should be concerned

with capabilities but not intentions. The reference here undoubtedly is to that intelligence which the commander in the field would use in making operational decisions. The wisdom of avoiding consideration of enemy intentions as a basis for one's own action in this case is obvious. But the "intentions" referred to in strategic intelligence are those of nations, not minor elements thereof. It is possible to base an estimate of national intentions upon such considerations as national psychology, personalities of the leaders, political ideologies, current relations with other nations, and similar intangibles, particularly in the political and economic fields. Because of this possibility, consideration of intentions should be included within the scope of strategic intelligence.

A properly conducted study of all nations and areas of the world from these aspects, that is, capabilities and intentions, should and will furnish a point of departure based on knowledge for determining one's own national policies and actions.

### The Factors of Strategic Intelligence

In order to study systematically the factors which influence the capabilities and intentions of nations, the subject matter of strategic intelligence may be divided into groups, more or less arbitrarily, and along lines of logical academic cleavage. This arbitrary academic grouping of the subject matter might result in the establishment of categories for purposes of detailed study and analysis. These categories, or components, have been labeled here "The Factors of Strategic Intelligence," and are set forth as follows:

#### Topographic

The physical characteristics of an area set the stage, or better, furnish the stage upon which the human drama is played. In the broad sense in which it is used in strategic intelligence, topography em-

braces all aspects of the physical environment of man, both natural and artificial. It should be concerned not only with such things as the position of a country on the globe, and its size, shape, boundaries, climate, weather, land forms, drainage, and the materials of which the surface of the land is composed, but also with the cultural, or man-made features of the landscape such as cities, roads, railways, dams, and so on, which have altered the landscape and terrain. The elements should be viewed and weighed for the purpose of determining their contribution to the strength or weakness of the country, and with the further purpose of contributing to knowledge of the character of all places where war might be fought.

#### Sociological

Sociology, basically, is the study of groups of human beings; their numbers and types, the activities of each group, the relationship between groups, and of such intangibles as their character, habits, attitudes, and prejudices. Such a study covers a widely diversified field, and must include such items as the family, the established church, the educational system, the union movement, taboos, reaction to propaganda, social security programs, attitudes towards government if any, and a myriad of other equally dissimilar considerations. The significance of sociological intelligence becomes more apparent when one considers how different will be the reactions of peoples with widely divergent backgrounds, ideals, and traditions. A highly cultured industrialized people will go to war under an entirely different set of circumstances from those which would motivate a peasant people, or a race of barbarians, to such action. For strategic intelligence purposes, the study of people in groups should be dealt with under four principal headings: population and manpower, or demography; labor problems; public opinion; and public welfare.

### Political

The international position of any modern nation depends upon many factors. Its power is determined not only by the size of its military establishment and its supply of manpower and materials, but also by the competence and skill of its leaders. Such skill is manifested not only by the ability of the leaders to achieve objectives without resorting to armed conflict, but is seen in their ability to formulate national aims and to obtain the national unity of purpose to carry out those aims. The study of the elements in the political factor, including such fields as political structure, administrative organization, national defense policies, foreign policy, political parties, institutions and procedures, and budgets, to say nothing of the ability of government to mould public opinion, will, when interpreted against a background of other factors, contribute heavily to knowledge of how a nation can and will react in any given set of circumstances. It may be said that study of the political factors provides the best source of indications as to the intentions of other nations. In addition, in time of war such study provides a useful measure of the effectiveness of an enemy's war effort.

### Economic

Economics, in its simplest terms, is the study of the means by which groups of people earn their living. In the modern world there are almost as many means of earning a living as there are groups of people. The means employed involve all of the complicated conditions affecting production, distribution, and consumption of innumerable articles of material wealth. Economics certainly affects the strategic capabilities of a nation in many ways. There is one school of thought which considers economic forces the basic causes of all wars, regardless of the immediate political objectives of the warring nations and of the psychological attitudes of their peoples. There is no question

that in time of peace the principal contacts between nations are in the economic fields of trade and competition. Likewise, economic weapons, such as blockade, pre-emptive buying, fiscal pressures, and restrictions on materials at their source, are the most powerful weapons available in international dealings short of war itself. Furthermore, the economic potential of a country is the best single measure of its capabilities from the strategic point of view. It must be granted that a comprehensive study of the economy of a country will be an exceedingly complex undertaking, and that sound conclusions can be reached only with the utmost difficulty. Even so, a thorough and detailed analysis of economic forces and developments within nations and between nations is required before any estimate of strategic capability can be reached.

### Armed Forces

In the final analysis, at least historically, military might has been the ultimate means of imposing the will of one nation upon another. There are other methods of warfare: political, economic, psychological, to be sure, but armed force is the fist which has administered the final blow. For strategic purposes, the study of the armed forces of a nation (which includes Ground, Navy and Air) must go far beyond the mere counting of numbers of men and pieces of equipment.

The emphasis of study in regard to armed forces intelligence must vary considerably between peace and war. In war, a large proportion of the intelligence effort is directed toward determining the order of battle of the enemy and his operational capabilities. In peacetime, it is possible to concentrate more upon the basic military structure, the doctrines and the mobilization plans of a country.

It is important to know how a nation administers its armed forces; the structure of its high command; how that high

command is subordinated to government; how integration is achieved between the components of the armed forces. Likewise, one must know the tactical organization, or the number and types of subordinate units, and the number, ranks, and functions of personnel and equipment; also the general doctrine and principles followed in organization. It is necessary to know the manpower available, now and in the future; the physical fitness standards; the principles governing design of fortifications and defenses in addition to their physical specifications; the methods of supply and movement; the tactics governing employment and the training of the armed forces. These are only a few illustrative items beyond order of battle and operational capabilities which are topics for consideration in the field of armed forces intelligence from the strategic point of view. However, all of these and more must be studied in order to gain that comprehensive knowledge which is essential to an estimation of the strategic capabilities of another nation.

### Technical

This subject deals with military weapons and equipment. The justification for setting it aside from Armed Forces as a separate factor lies in the technicalities encountered in the mechanics of administration. Technical intelligence is concerned with the physical characteristics or specifications, mechanical functioning, methods of operation or employment, and methods of manufacture of all weapons and equipment which are either operational or may become so. The study should not be confined to weapons. For full information, all items such as uniforms, insignia, decorations, individual and unit equipment, surgical instruments, and all sorts of the other special equipment issued to the armed forces should be included.

The importance of including technical

intelligence as a factor of strategic intelligence lies in the fact that the primary interest of the technical services (those who perform the actual research) is bound to be limited to a study to determine in what ways the matériel studied may represent improvements over one's own items. The technical services are not prepared to estimate the strategic significance of their findings. Such an estimation must be made against the background of knowledge built up from a study of the other strategic factors. This function of estimation must be reserved to the strategic intelligence analysts.

### Scientific

The history of the entire world has been profoundly affected by advances of science and by the practical application of knowledge gained through pure scientific research. It is possible to attribute the ascendancy of one civilization over another in large part to the application of scientific discovery in the fields of agriculture and industry, particularly in the field of military equipment and weapons. The importance of the contributions of science to the military in recent years has increased to gigantic proportions. Obviously, a factor exerting such an influence upon progress must be a fundamental interest of strategic intelligence.

In order to arrive at an estimate of the scientific capabilities of nations, it must be the mission of those who produce scientific intelligence to discover such facts as the activities of scientists in other nations, the fields in which research is being conducted, the facilities made available for such research, the number and caliber of scientists engaged, the funds available, the discoveries made and their probable application. Intelligence of this type, when weighed with intelligence developed along other pertinent lines, will contribute to the completeness and accuracy of any estimate of overall capabilities and intentions.

### Biographical

Last in the arbitrary list of strategic intelligence factors is the study of people as individuals. People are studied collectively in sociological and political intelligence, and to a lesser degree in each of the other factors, except topographic and technical. But the study of people as individuals is not covered elsewhere, and it should be.

The contribution of the personality of a dynamic leader to the war-making ability of a nation is attested throughout history. Frequently, knowledge of individuals is the principal means of solution to an intelligence problem. Familiarity with the characteristics and attitudes of the leaders of a country in all fields may be of valuable assistance in determining the intentions of that country. Such knowledge is also often particularly important in the field of counterintelligence, where the solution to a problem may lie in recognition of individuals at the working levels of organizations. There are serious difficulties to be encountered in the search for biographical information. First is the problem of selection. Upon whom shall information be sought? Or, said another way, when does a person become important? Obviously, data can be maintained upon only a small fraction of the earth's more than two billion inhabitants. The solution to that problem is one for those engaged in the work, but the difficulty of selection does not detract from its necessity. The importance of the biographic factor lies principally in the fact that the significance of all the other factors must be interpreted in the light of the personality of those who control them.

### Communications

This subject has been established as a separate category principally to insure complete and adequate coverage. It includes not only the layman's interpreta-

tion of the word, telecommunications, but also the entire system, methods and facilities of transportation.

It can be argued very cogently that communications are an integral part of a nation's economy and should, therefore, be handled as economic intelligence. It can also be reasoned that the critical importance of communications to military operations dictates their inclusion in armed forces intelligence. In either case, the importance of communications to a nation's war effort is obviously of the highest order, and a complete and accurate study of all that the term implies must be made and fitted into its proper relationship with the other factors.

### The Factors Compared

The arbitrary breakdown of the subject matter of strategic intelligence, as presented here, might easily lead one to believe that each of the factors is separate and apart from the others. This is not the case at all. The body of strategic intelligence might be likened to a printed full color picture. Strategic intelligence requires the assembling and integration of all of its components to become fully useful. The picture requires the impression of three or more color plates to achieve full identity. One of the factors, or one of the color plates, might well be useful in itself, but quite misleading as to the form of the final product.

Referring to the factors of strategic intelligence, one can see certain important relationships between them. In the first place, at least two of the groupings are not on an equal footing with the others. Technical intelligence might be studied as a branch of another factor. Biographical and communications intelligence likewise are not separate factors in the true sense of the word, but are a portion of many of the other factors. All are considered separately because unique problems are involved in their analysis. Some

persons, with considerable justification, might regard scientific intelligence as subordinate to the other factors, particularly armed forces and economic. It should be remembered that the division here is arbitrary and is open to revision provided the entire field is covered.

Another and important way of looking at the interrelation of the several factors is to recognize that they are not all mutually exclusive. Each depends upon one or more of the others to complete its own picture. As a simple example, it is impossible to appreciate the full significance of armed forces intelligence without weighing it together with intelligence developed in the political, sociological, and in fact all other, fields.

It is true that each of the factors of strategic intelligence may be dealt with independently of the others and with profit. However, strategic intelligence must be a well balanced synthesis, or putting together, of all the factors which go to make it up.

### Conclusions

In the face of the changing relative positions of the powers in the world, several points stand out clearly. There exists a need for intelligence of the over-all type which can be used by both military and civilian leaders in formulating and implementing national plans and policies. Knowledge of the type required can be obtained by systematic research and analysis of available information. Such knowledge must be obtained before the catastrophe of war plunges a nation into chaos and possible oblivion.

The process of production of strategic intelligence may involve a division of the subject matter into more or less arbitrary categories. Such compartmentation should be recognized as a mechanical and academic convenience and not as evidence of lack of community of interest among the several factors.

Military men must appreciate the similarity between strategic and combat intelligence, while recognizing that there are clear points of distinction. Combat intelligence concerns itself primarily with operational capabilities of an enemy and with the factors of terrain and weather as they may affect the accomplishment of the friendly mission. Strategic intelligence is more catholic in its interest, encompassing not only consideration of the over-all capabilities of nations, but of their intentions as well. Further points of differentiation between the two types are found in the speed of collection, processing and use of combat intelligence at tactical levels, as compared with the vastly larger scope and deliberation in production which characterizes strategic intelligence. The latter also is a continuous process, the importance of which is equally great in both peace and war.

The most important thought is to recognize that there is an overpowering need for intelligence of the over-all type, and that such intelligence is available. An uninformed nation cannot be strong. It has been said that the only defenses against modern weapons are dispersion and intelligence. At present we are unlikely to attain the dispersion; the more, then, do we need the intelligence.



# Engineer Support *in the Field Army*

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**I**N many theaters, World War II was called an "Engineer's War," not because engineers did any appreciable percentage of the fighting, but because as war becomes more and more complex, the importance of engineers and their major function becomes greater and greater. Reduced to its simplest form, the mission of engineers within the field army can be summed up in one word: mobility. Virtually everything that these troops do is aimed at either increasing the mobility of our forces or decreasing that of the enemy.

## Engineers with the Infantry Division

The smallest unit of the army which normally has an engineer component is the division. The old so-called "square" division had a combat engineer regiment organically assigned. This unit consisted of a headquarters and service company and two battalions of three companies each, and was generally employed with one battalion in the zone or sector of each infantry brigade. With the advent of the triangular division, prior to World War II, it was felt that one battalion of engineers would be sufficient. The first peace-strength triangular divisions that were assembled in this country in 1939 had an engineer battalion which consisted of a headquarters detachment of thirty men and three ninety-man companies. During the emergency period this unit was gradually increased, and when we entered the war, our divisional engineer battalions had

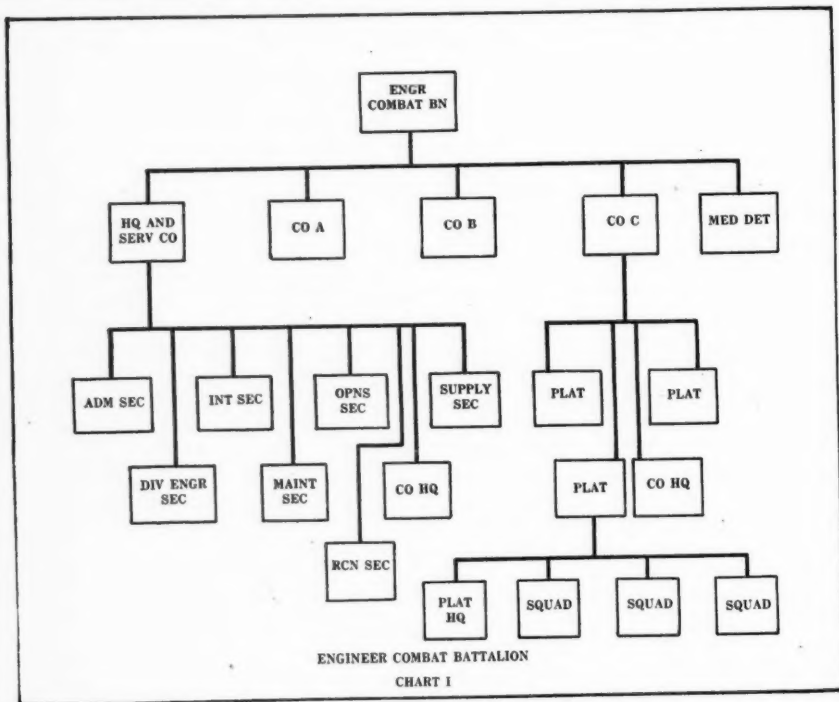
a headquarters and service company of about 120 men and three lettered companies of about 180 men each. With minor modifications, this organization remained in effect throughout World War II. Chart I gives its general organization.

Within the division, the battalion was employed with one of the lettered companies working for, and with, each infantry regiment, usually in a direct support status. When regimental combat teams were formed, a platoon from the engineer company became the engineer component, and every effort was made to further the association between engineer company and infantry regiment. This, of course, is directly parallel to the infantry-artillery combat team relationship. Unlike the division artillery, however, the engineer battalion had no fourth element, and when all three regiments were committed (which was the rule rather than the exception) the division engineer had no troops to work in the rear of the division area or to give engineer support to other elements of the division. His only recourse was to call upon the corps for assistance, and accordingly, it was quite usual to find corps engineers working in the division area, generally in a direct support role. This in itself did not create too difficult a situation, but because of it the corps had to call upon army for support and army had to call upon the communication zone. Thus it was quite the usual thing

to find a forward displacement of engineers of all echelons, each having units and responsibilities in the zone of the next forward echelon. The obvious solution to the problem was to add to the engineer component of the division, and several recommendations were made to that end. The general board of the Euro-

organic part of the division rather than a unit obtained from some other echelon—certainly a desirable situation.

However, many experienced officers feel that there will be occasions when the division will not need a full battalion of engineers for its rear area jobs, and that the inclusion of an engineer regiment in the



pean theater recommended that the two battalion engineer regiments be used again in the division. That would permit each regiment, or combat team, to have the exclusive support of one company, and at the same time would provide the division engineer a full battalion for other tasks. Thus, the additional battalion, which was almost always required for work in the division area, would be an

infantry division would add too much. They believe that if support is available from the corps, it is better to have too few engineers in the division for *normal* needs than too many, and, of course, this point of view is unassailable. The new infantry division which has now been approved in general form provides for a fourth lettered company in the divisional engineer battalion. This will provide a

full company to support each regiment or combat team, and will also give the division some force as an engineer reserve.

Also included in the new infantry division is a bridge platoon, found in the headquarters and service company of the engineer battalion. This platoon is equipped with some three hundred feet of the new pneumatic float bridge which will carry all division loads.

### Engineers with the Armored Division

After the phenomenal success of the armor-heavy Nazi machine in Poland and in France had driven home the principle of mass employment of tanks, we began to form armored divisions, and it was recognized from the start that an engineer component would be essential to such an organization. The first armored divisions were of the so-called "heavy" type, with a regimental organization in the chain of command. These divisions had an engineer battalion of four line companies and a bridge company in addition to the usual administrative and service elements. This was a sizable organization, but in proportion to the large number of heavy vehicles in the division, it was by no means too much. Midway through the war it was decided that this "heavy" division was too large and unwieldy for the *blitzkrieg* role for which it had been designed, and, accordingly, a substantial reduction in the size of the armored division followed. The engineer component absorbed its share of the reduction. It was reduced to become, for all practical purposes, identical to the engineer battalion of the infantry division, and the same difficulties that the infantry division was experiencing then became evident in the armored division as well. Generally speaking, the bridge company, although no longer organic, was replaced by attachment, but the loss of the fourth line company was keenly felt. A combat command with any appreciable attachments needs

at least a company of engineers, and if a company is given to each one, it produces the same displacement of engineer units which the shortage in the infantry division causes. Again the solution is the addition of engineers, and again, the fourth line company has been included in the engineer battalion of the new armored division. The replacement of the bridge company as an organic unit has also been accomplished. Generally, the principle of one engineer company working with, and for, each of the three fighting elements, with a fourth engineer company for rear area jobs and division troop support is valid with either the armored or the infantry division.

### The Corps Echelon

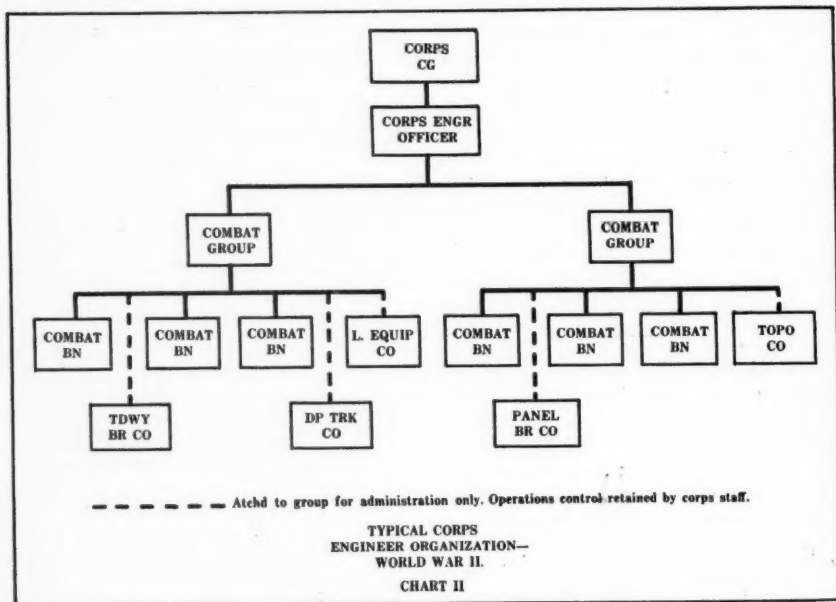
While the advent of the triangular division had outmoded the two battalion combat engineer regiment as a divisional unit, it was retained in the corps echelon. At the time of our entry into the war, we were taught that two of these regiments and a small topographic company to perform reproduction and mapping should comprise the corps engineers. We were also taught that all bridging equipment, except for a very light (12-ton) ponton bridge carried by the combat regiment, and all maintenance, supply and other support should be furnished by army units.

Gradually as the war progressed and more experience was gained in maneuvers and in combat, it was realized that the corps must be made more self-sufficient. Accordingly the following were all added to the corps engineers: Treadway bridge companies, which, as we have seen, had been taken from the armored division; equipment companies to augment the power machinery available to engineer units; improvised panel bridge companies to handle the versatile Bailey bridge, which was borrowed from the British, and even dump truck companies. At the same time our army adopted the group as the unit

for support at corps and army level and the engineer regiments were converted into groups of two or more independent battalions. This provided a great deal of flexibility, but at the expense of an enormous increase in overhead, and loss in esprit.

By the end of the war, a typical corps engineer organization looked somewhat like that shown in Chart II. Generally,

also going through an evolutionary process. Since the table of organization for the corps headquarters allowed only four officers and eight enlisted men in the engineer section, it was manifestly impossible for the corps engineer to direct, coordinate and command all of the corps engineer units without raiding them for personnel. Operating a headquarters equivalent to a brigade, and at the same time



there were two groups of two to four combat battalions, similar to the infantry divisional battalions, plus supporting units as shown. Generally, when the corps had only one of these bridge companies, or equipment companies, it was attached to one of the corps groups for administration only, and operational control was retained by the corps staff.

Command and control of the numerous engineer units in the corps echelon was

doing a special staff job for a corps, cannot be done with such a small staff. However, the expedient of borrowing officers and men from other units caused these units to be short, and raised the inevitable questions of vacancies, promotions, etc., with the attendant adverse effects on morale.

To correct this situation many officers have recommended that an engineer command headquarters for the corps be set

up in a manner precisely the same as that now in force for the artillery, and Headquarters, Army Ground Forces has now proposed a Headquarters, Engineer Brigade, Corps. The engineer commander would double as the corps engineer staff officer.

In addition to the difficulties inherent in the existing command set-up for corps engineers, many experienced officers believe that the extreme flexibility afforded by the group and independent battalion organization is not necessary. Continued association of units and the resultant teamwork is so valuable that only in emergencies should advantage be taken of the ability of the combat battalions to serve independently or with another group, yet with the group organization there is a tendency for higher headquarters to shift battalions unnecessarily. It has been proposed therefore, to organize the combat battalions into regiments of three battalions each. The battalions would retain their ability to operate independently at need, but their assignment to regiments would be permanent. Such an organization would by no means preclude the attachment of other engineer units, as is now done with the group. The advantages accruing from the point of view of morale and esprit are considerable.

If the changes which have been recommended to the War Department are adopted, the "type" corps engineer organization will be similar to that shown in Chart III. This chart does not, of course, include any combat or armored engineer battalions which are organic to the divisions attached to the corps. Note that the Engineer Treadway Bridge Company has become the Engineer Ponton Bridge Company, Pneumatic Float. Since the new M4A2 bridge, with which this unit is to be equipped, has a full deck, the term "Treadway" is a misnomer and has been discarded. This is the same unit which

has now been included in the armored engineer battalion; and the bridge platoon in the infantry division has the same equipment, but only half the amount.

The employment of the corps organization is worthy of consideration. Generally the mission given to regiments is that of supporting a division or divisions, and at the same time maintaining the roads within a given area. The road net with which the corps is concerned is divided between the engineer regiments by a boundary which runs from front to rear. This arrangement facilitates the support of the front line elements, and gives continuity of command in the development of a single route. Corps engineer units are seldom attached to divisions or to other elements of the corps, because they function best in direct support. An armored division, or a cavalry group, making a wide envelopment or a deep penetration will probably have corps engineers attached, and an assault on a small island by a single division or a combat team will result in engineer attachments. However, direct continued support by the same regiment, and preferably by the same battalion, affords the best service for a front line element of the corps.

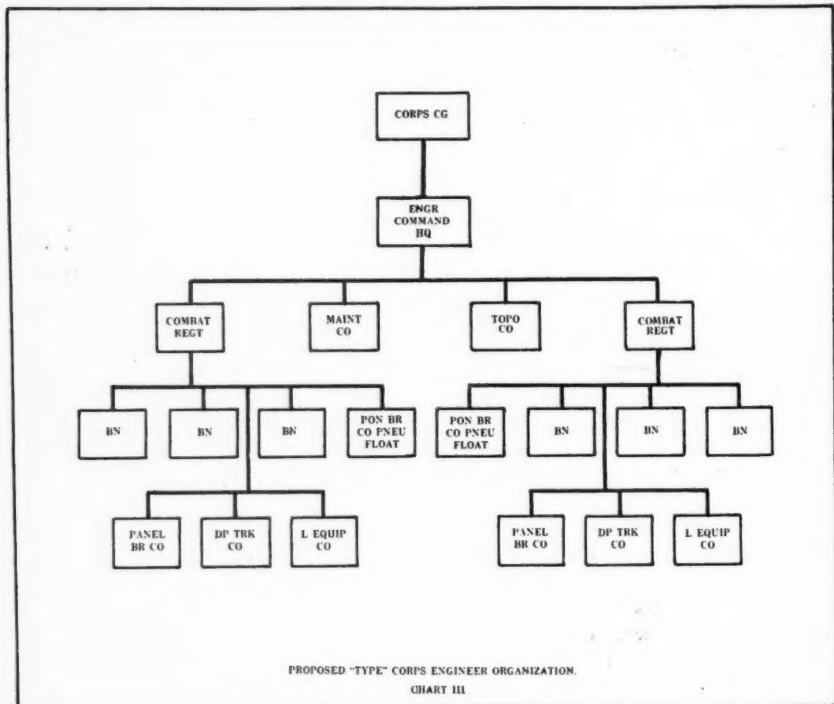
#### The Army Echelon

During the prewar period it was thought that the engineer organization in the army echelon would be built around the general service regiment. This unit was quite similar to the combat regiment in organization; that is, it had two battalions of three companies each, but it contained considerably more heavy equipment and was not fully motorized. Designed to supplement the general service regiment was the so-called separate battalion; a large (1200 man) battalion which could furnish large numbers of unskilled and semiskilled laborers. Rounding out the army organization were light (10-20 ton) ponton companies, heavy

(25-40 ton) ponton battalions, water supply battalions, dump truck companies, shop (maintenance) companies, depot companies, a topographic battalion and a camouflage battalion. Some units of each of these types were activated during the 1940-41 emergency, most of them for the first time since World War I.

As might be expected, maneuver experi-

can be made into a good general construction unit if given the necessary equipment. Moreover, the effect on a soldier's morale of being included in the category of a combat soldier is very good. Accordingly, the combat group began to replace the general service regiment as the basic army engineer unit. It was necessary, however, to retain some heavy construc-



ence and later lessons learned in actual combat led to a series of changes in the make-up of the units included in the army engineer echelon. Perhaps the first casualty was the separate battalion. Early in 1942, the separate battalions were largely converted into general service regiments. Combat experience developed the fact that a good combat engineer unit

tion units in the army. Since, by this time, the group idea had become almost universal, we began to find independent construction battalions under a construction group headquarters in some of our field armies.

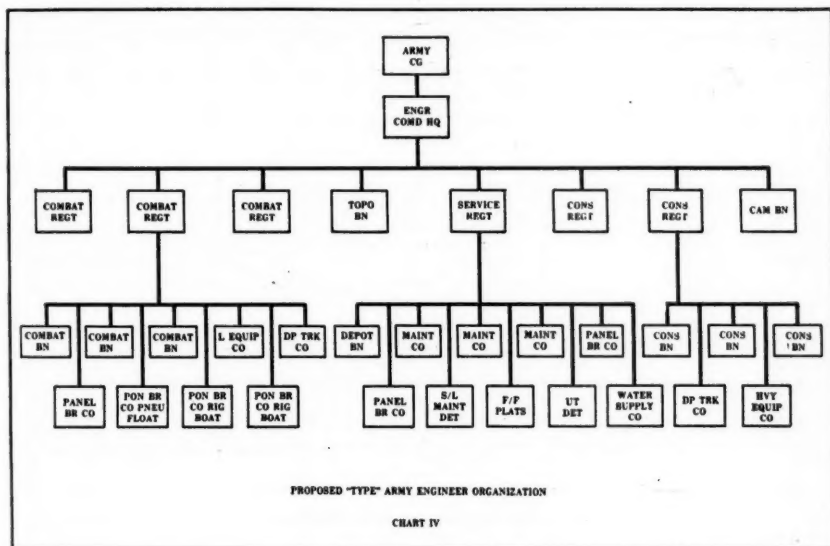
While the general engineer units of the army were undergoing changes, the special units were also developing. The treadway



bridge developed by engineers of the armored force proved superior in every way to the old ponton bridge equipment. With the British floating Bailey bridge it replaced both light and heavy metal ponton equipment to a large extent. New types of equipment made the water supply battalions unnecessary. Small portable units with combat battalions could supply the needs of the army in most cases, and

lems was endless, and the army organization was revamped in each case to fit the new situation.

The question of the command echelon also reared its head at army level. Again, the engineer section of the army staff was quite small and totally inadequate. The situation varied in the several armies, but without exception, the army engineer did in practice command his units, opera-



where they could not, a water supply company was found to be a more efficient unit. A need for new types of units was also felt. Map supply and distribution were serious problems in a fast moving war, and a map depot and distribution company was born. Incendiary bombs made fire a definite hazard and fire fighting platoons were added to the engineer list. Utilities were suddenly taken from the Quartermaster Corps and handed to the Engineers, so utility detachments became necessary. The list of new prob-

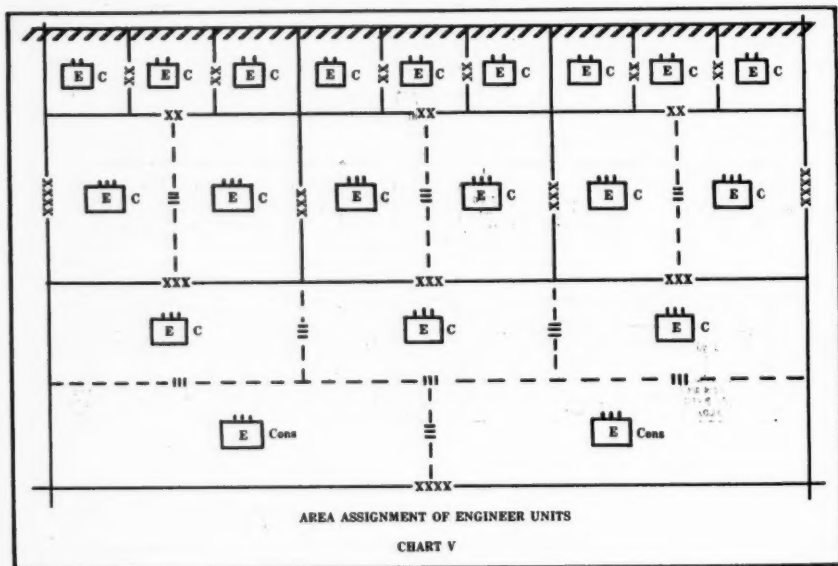
tionally at least, and he simply did not have the personnel to do it. As in the case of the corps, this job was done for the most part by taking personnel from subordinate units, and with the same results.

All of these experiences have crystallized, and with the clearing away of the smoke of battle, we now have some more or less definite impressions on which to base future organization. Chart IV shows a proposed "type" army engineer organization. Note that the combat regiment

is the basic unit. This is the same regiment that we found in the corps, but with more extensive attachments. Here we find the rigid boat ponton bridge, a new floating bridge which can be reinforced to carry loads approaching 100 tons. For rear area operation and heavy construction, two construction regiments are provided. Supply and maintenance units are in general grouped under a single regimental headquarters for con-

port missions which the corps might request. The rear of the army area may be divided between the construction regiments for follow-up and heavy construction work. A schematic drawing of the assignment of areas to engineer units in the army area is shown in Chart V.

Necessarily, the theater in which an army operates, the army strength, the nature and amount of enemy resistance; all will affect the engineer organization,



venience in control of supply and in the administration of the included small units. Finally the topographic battalion and the camouflage battalion operate directly under the engineer headquarters. The army engineer echelon is not a small unit. The units shown on Chart IV will aggregate about 20,000 officers and men.

As to employment, tasks are generally assigned to regiments on an area basis. One solution is to assign a combat regiment to the area immediately behind each corps, in order to give that unit any sup-

port missions which the corps might request. All that can be done here is to propose an organization for what we may call "normal" circumstances.

Whatever type of warfare the future may hold, however complex it may become, it is safe to say that some part of any future conflict will be fought out on the ground, and that mobility will still be a prime requisite of success. To an army which needs mobility or wishes to deny it to the enemy an engineer component will be a "must."

# Operations and Routing *of* Modern Convoys

Rear Admiral M. R. Browning, *United States Navy* (Retired)

**W**ORLD Wars I and II have witnessed swift and far-reaching advances in the field of belligerent shipping protection. In the earlier of these two great conflicts, the submarine made its appearance for the first time on the stage of modern warfare. Then, and again in the later struggle, it played the role of the villain of the piece; but in the fighting of 1939-1945 it was ably seconded and abetted by the new *enfant terrible*—the military airplane.

As their principal countermeasure to meet the threat of the U-boat and, later, the airplane, the belligerent maritime powers in both wars instituted vast convoy networks, implemented by painstakingly developed operational procedures and tactical doctrine for both the shipping under escort and for the escorts themselves. In the forms in which those procedures and doctrine stand today, they constitute the final chapters, so far written, in an unfolding drama which has already spanned over 700 years of history. In future wars, if such there be, new weapons and techniques of attack may well force drastic changes in the outward features of the 1947 model of convoy operational doctrine. The fundamental principles, however, which underlie that model have never changed and never will, and the form in which it is now crystallized must serve as both the matrix and the embryo of any successful protective system in the years ahead.

An understanding of today's doctrine is therefore, an essential in any military man's education.

Prior to the sailing of any modern convoy, a conference—or a series of conferences—is held, during which the organization, command channels, security measures en route, convoy formation and maneuvers, voyage route and rendezvous points, and other vital aspects of the conduct of both the convoy and the escort are reviewed completely.

After the organization of the convoy and the command channels have been outlined and confirmed in the conference, the operational subjects which are discussed in the following paragraphs are taken up and covered in meticulous detail. Every commander and ship master in the organization must be completely clear in his mind on each point before the convoy's departure. Normally, these subjects are discussed in the meeting in the same order as that in which they are treated herein, but there is no necessity for adhering to that sequence and it is often varied for one reason or another. The essential function of the conference is to ensure that all the ground is adequately covered; to that end, no conference agenda ever omits any of the points enumerated below.

## Security Doctrine

Security is a matter of the most vital importance to every ship and individual in the convoy and the escort. The Con-

voy Commodore is concerned with it every hour of the voyage and it is not too much to say that it is both his heaviest responsibility and his worst headache.

*Trails* of floating debris, oil slicks from bilge discharges or leaky seams and other telltale flotsam are one of the main threats to convoy security. Early in the last war, this was an everpresent source of jeopardy. As time went on, however, our merchant masters stiffened their enforcement of shipboard discipline and brought this violation of doctrine more nearly within bounds.

*Smoke* is another grave and all too common menace. It has been known to disclose position at distances upwards of forty nautical miles and to serve a fatal giveaway due to its odor at night and in fog. Modern oil-burners with experienced crews are not often a source of trouble in this regard, but older coal burning vessels, and even newer ships whose fireroom crews were green, made smoke an ever-present problem in World War II. As in the case of careless disposal of floating refuse, the control of smoke is a matter of discipline and up to the individual master.

*Communications* activities were responsible for the most frequent and serious violations of convoy security doctrine in the late war. The major obstacle in overcoming such malpractices has always been the wartime shortage of qualified operators. In this respect, the U.S. Merchant Marine has long been woefully deficient; our code requires only one radioman per ship as contrasted with the British regulations which stipulate not less than three. During the war, we offset the deficiency as well as we could be putting a navy radioman on each convoy ship in addition to the one merchant operator already there, but the overload was still excessive for two men to handle and the combination of the Armed Service operator working alongside a highly paid labor

union member sometimes produced complications. A further factor in the poor performance of U.S. vessels in communications was the widespread lack of modern equipment. Other and higher priority demands for such equipment made it almost impossible to obtain until the last year of the war. In 1944, however, this situation eased and a further marked improvement resulted in that year from the successful production of a shipboard radio transmitter whose wave could be set to cut off at any desired radius from the origin. These changes, together with the results of unremitting training and education of personnel, achieved great progress by the closing year of the conflict in reducing the terrible price we had been paying for our shortcomings. Illustrative of how high that price was, is the finding of an official inquiry in 1943 into 142 U.S. convoy sinkings chosen at random; eighty of these were conclusively traced to communications failures of one kind or another.

*Stragglers* are individual vessels which have dropped out of convoy due to damage or trouble, or have lost contact with the main body during fog or attack or for any other reason. U.S. doctrine requires a straggler to return to port if separation occurs during the first day at sea. Thereafter, if a straggler is unable to rejoin within forty-eight hours, she is constrained to follow a pre-specified "stragglers' route" running generally parallel to the main route but offset some forty to sixty miles to the side and so charted that it never crosses the main track. Stragglers constituted a large proportion of our losses in the Atlantic during the late war.

#### Convoy Formations

During World War II, no limit was placed on the size of any convoy leaving a port in the Western Hemisphere. The largest such formation included eighty-four vessels and the smallest comprised

a single ship—the latter a high speed transport of the luxury liner class.

The cruising formation of a modern convoy is broad in front and shallow in depth. The following main considerations determine its features:

(a) Accurate *station-keeping* is imperative; hence column elements must be kept as short as possible. Experience has shown that more than four vessels in a column will have excessive difficulty in station-keeping and will exhibit a tendency to straggle. Experience has likewise demonstrated that a standard distance between individual ships in column of from 500 to 600 yards is the optimum. At times, the disadvantage of longer column elements must be accepted in order to avoid prohibitively broad fronts. For example, in the eighty-four ship convoy mentioned above, as many as seven ships per column were employed to keep the front within maneuverable bounds.

(b) The *center column* element of the formation is normally kept shorter than the others to permit maximum all-round observation and signalling by the convoy flagship which occupies the station at its head. Not over three ships are normally stationed in it.

(c) Minimum *exposure to torpedo attack* is another vital consideration. The broader the front and the shallower the depth of the formation, the smaller the target which it presents to close range torpedo attack; but the breadth of the front must be limited to that which the escort can screen effectively.

(d) The necessity for *efficient maneuvering and visual signalling* further limits the acceptable width of front. Too broad a front makes the disposition cumbersome and hampers the signalling. These facts, combined with those in (c), above, have resulted in the present U.S. practice which limits formations to not over thirteen column elements separated by 1,000-yard intervals. British modern doctrine

is similar except for the fact that they consider fifteen columns to be the acceptable maximum number.

Within the formation, each ship is given a designated call which identifies her by her assigned station. For example, the designator "42" identifies that vessel which is second in the fourth column counting from the left flank of the formation. These designators stay with the station, i.e., if a ship changes station for any reason she acquires the new designator to correspond.

### Convoy Maneuvers

Convoy maneuvers are, of necessity, simple. The absence of homogeneity in the many ships of the formation, combined with the lack of sea room between adjacent column elements, render complicated maneuvers out of the question. There are three basic maneuvers which are used: the head of column movement in which the leading ships of all columns turn simultaneously to the new course and the succeeding vessels follow around in the wake of their respective leaders; the simultaneous turn movement in which every ship turns individually and at the same instant to the new heading; and the "wheeling movement" in which the column elements on the inside (the flank toward which the turn is made) slow to permit the outer elements to work around to their new positions. The simultaneous turn movement is the most useful and frequently employed of the three. The head of column movement is limited to course changes of small magnitude, due to the 1,000-yard interval between column elements. The "wheeling movement" is cumbersome and is only used for permanent course changes which are accompanied by a change in the formation axis.

The simultaneous turn movement is employed in zigzagging. Doctrine calls for zigzagging by all convoys whose speed through the water is ten knots or over. Except in very low visibility, zigzagging

is continued day and night. The zigzag plan (a schedule of exact times and amounts of each temporary course change to be made) should be changed at least once each day. Every ship in convoy carries copies of the many standard plans which are used, so that a plan can be changed simply and quickly by reference to the pertinent plan numbers.

In addition to the zigzag, doctrine requires the use of evasive base course changes. All convoys, both fast and slow, should make a large alteration of base course—thirty degrees or more—after dark each night, and should maintain the new direction for from two to four hours, depending upon the speed being made at the time. Convoys making less than ten knots should also make one or more large changes during each daylight in order to evade submarines which may have been directed into attack positions along the track ahead.

#### Convoy Routing

In World War II, U.S. control of shipping was closely interlocked with that exercised by the British. In the Atlantic, particularly, it was an Anglo-American joint system in the fullest sense and it would be futile to attempt to isolate for discussion the routing operations of either of the two navies.

With the outbreak of war in 1939, Great Britain instituted a naval control service of all merchant shipping and placed it under the Trade Division of the Admiralty. The first step taken by this new agency was to consolidate all vital shipping lanes which radiated from the home islands and from the Empire and Dominion ports overseas. The number of routes was condensed and concentrated into a carefully chosen few to permit the most effective cover and escort possible by the naval forces available at the time.

Early in 1941, when the United States, although still technically neutral, was becoming more deeply embroiled with

each passing day, our Navy Department set up a control service for shipping similar to that in the Admiralty at London. The U.S. organization, called the "Convoy and Routing Section," was established in the Ship Movements Division of the Office of the Chief of Naval Operations, and was charged with the control of all merchant shipping within strategic areas of U.S. responsibility. Its practical functioning was parallel to that of its British counterpart. Then, in December 1941, coincident with our formal entry into the war, a joint British-U.S. Routing Agreement to govern the coordination of the shipping control agencies of the two countries was placed in effect. It was commonly referred to as "BUSRA." It defined the respective areas of responsibility and spheres of control of the two powers, and provided a *modus operandi* for implementing joint action in regard to all shipping.

In general, the assignment of areas of responsibility followed the pattern previously established by the democratic nations in their delineation of the so-called strategic areas throughout the world. In the Dominion areas, however, i.e., those of Canada, New Zealand and Australia—the Royal Navy was charged with overall control. Also, largely due to the threat of Japan in the Pacific and our consequent heavy naval commitments there, Britain retained complete control over the vital Atlantic convoys between North America and the United Kingdom, both east and westbound, but with the proviso that emergency diversion in their routes should be made by the Commander of the U.S. Eastern Sea Frontier when they were within the sea boundaries of that frontier. As a matter of desirable further decentralization due to distance, both the United States and Great Britain found it expedient to delegate control of routing to the CINCPAC (Commander in Chief, Pacific Ocean Area) and the Commander



in Chief, Mediterranean, in their respective theaters.

The U.S. and British control systems were brought into close accord at the outset and were so maintained throughout the war. A British Naval Liaison Office was to be found in every important U.S. port and in all ports controlled by the U.S. throughout the world, and U.S. Naval Liaison Offices were similarly established in all major British and Dominion ports. Joint communications facilities and joint merchant shipping codes were employed in all areas. Provisions were also made at all control headquarters for varying the boundary lines between areas of control responsibility as strategy or expedience might render necessary. This last was an important feature of the system, since the transfer of operational control over any convoy had to be automatic in view of the necessity for radio silence on the part of the ships, yet had also to conform accurately to the progress of the group along its route. The boundaries of the various control areas were known as "Chop Lines." The date on which a convoy passed across a Chop Line was its "Chop Date," and was determined well in advance and specified in the sailing orders by the Routing Officer in the office of the authority who originated the movement. At noon, Greenwich Civil Time, on the Chop Date, the "Chop" occurred and the control of the convoy passed automatically from British hands to the U.S. or vice versa. At the Chop, all communication schedules and listening bands were shifted to those effective in the new area control. In connection with these shifts of operational control, however, it should not be forgotten that, regardless of the control area in which a convoy might be steaming, if it was within the waters of a Sea Frontier, the Commander of that Sea Frontier made any emergency diversions in its route which became necessary.

A global organization was required to

correlate this intricate system. The nerve centers of that organization were located in Washington, London, Ottawa, and the Flag Offices of CINCPAC. From these centers, a steady flow of information and orders, directing the movements of practically every ocean-going transport and cargo vessel in the world that was not in the hands of the Axis, went out to the thousands of Port Directors, Naval Liaison Officers, Naval Attaches and Consular Officers in every allied and neutral country. The Pacific Theater was not completely integrated into this system during the early part of the war, but the controls there were patterned after those in the other oceans and were operated in the same manner.

The determination of the specific route to be followed by any convoy depends upon many factors. Some of the principal ones are:

- (a) Any enemy forces in the area must be avoided if practicable.
- (b) Waters adjacent to enemy bases should not be entered unless absolutely necessary; if entered, they must be crossed as directly and rapidly as possible.
- (c) Much used routes should be changed frequently to avoid concentrations of the enemy at focal points which he soon detects.
- (d) Itineraries which facilitate good coverage by friendly shore-based air are preferable. If such cover cannot be provided along a route, it should be discarded unless conditions favor the operation of ship-based planes and these are available in the escort.
- (e) The desirability of practicing deception must be borne in mind in choosing a route. Initial courses upon departure should not be such as to indicate true destination, and a round-about track with daily evasive changes should be used.
- (f) In the approaches to all major terminal ports and in any heavily traveled sea area, even in mid-ocean, traffic con-

gestion makes the separation of convoy routes into one-way traffic lanes a necessity to avoid confusion, collision risk, and easy picking for the U-boat. Such separation proved indispensable in the entire Atlantic during the late war and it was made mandatory.

There are many additional similar factors, some universally applicable and some which are pertinent only to special localities or conditions; but all of them have one feature in common, viz: they all involve delays en route and so militate against realization of the wartime goal of swiftest and most direct transport. Nevertheless, they are and always will be inescapable if shipping is to be gotten through without excessive losses. In large measure they are the unpalatable but final determinants of all convoy routes.

In the Atlantic Ocean, the original network laid out by the Trade Division of the Admiralty was adopted by the United States when we became belligerent. In addition, we added many routes in the western reaches of the Atlantic to handle our own coastal traffic and our lines to South and Central America and through the Panama Canal. As the strategic situation in Europe changed with the acquiring of our footholds in North Africa and the resurgence of Russian strength, new routes into reopened territory were inaugurated and old ones were abandoned. In the final two years of the conflict, the United States was able to establish air and naval bases in the Azores. This development permitted modification of the old network feeding the British Isles, Northern Russia and, later, France, to reduce the long north-about track which had been the only usable artery into those areas up until that time. Not all the convoys which had formerly taken the Arctic Circle route could be brought south to the new Azores lane, but a large number

of them could be and were, and the resulting savings were of direct and tremendous strategic importance in the final Battle of Europe.

In other ocean areas, the principles upon which convoy traffic patterns were based were identical with those in the Atlantic. In those other areas, however, the enemy threat was not so compelling and the traffic load was not so heavy, so that the lanes required were neither so numerous nor so closely controlled.

### Convoy Costs

The enormous task of organization, routing and protection of convoys makes a grievous demand upon the resources of a belligerent nation. Over and above its heavy drain on the naval and military forces, it imposes a staggering burden upon the country's already over-strained merchant marine. For example, in the Anglo-American Atlantic convoy system in World War II, there was a daily average of some 1,500 ships at sea in convoy. Each such vessel averaged a four-day waiting period in port while its convoy was being assembled. Further delays were inherent during loading and unloading of cargoes at the terminal ports. Average trans-Atlantic crossing time for a convoy was two weeks. From these figures, it is obvious that the use of convoy cost us at least 12,000 ship days a month. This dismal figure represents the optimum for which we could hope in that war; in actuality, the cost was much greater. Nevertheless, convoy was a "must" for us then and it will be so in any future conflict. The most promising fields for effort to improve future efficiency of our convoy system lie in the expansion of terminal port facilities to cut down layover time and in the increase of air coverage of overseas routes to eliminate as far as possible the costly detours of the past.

# Command and Staff Training *for the* Post War Army

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and  
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*This is the first of two articles to be published under this title. The second article will appear in the November issue of the MILITARY REVIEW.—The Editor.*

IT is generally accepted that a balanced military establishment capable of meeting our national commitments requires a fully developed command and staff framework as well as a force in being and adequate reserves. The demands of the moment have focused attention on universal military training which emphasizes individual and unit training in order to create the necessary formations, particularly in the civilian components. However, the day to day administration of this vast interim project and peacetime routine must not be permitted to obscure the vital necessity for realistic command and staff training.

The first essential of such a program, an adequate educational system to furnish the necessary reservoir of trained individuals, has been established. Its base has been expanded to make maximum use of the facilities of our civilian institutions. The service schools, colleges and universities through their regular, associate, and extension courses offer a comprehensive, integrated, and progressive military education. The school system trains the officer initially to deal with the problems of the platoon and company. It then develops him through the years on successively higher levels until he is

capable of planning in the realms of industrial mobilization and national policy. The initiation of such a vast educational program within one year of the close of a successful war is in itself a major accomplishment, and in due time should provide the necessary trained individuals.

The second essential is a means of selecting the proper individuals for higher command and staff duty. To meet this need, personnel procedures have been subjected to considerable revision. In place of a haphazard system of assignment controlled by numerous chiefs of branches and services, a Central Officers' Assignment Group has been established to guide and control the careers of our professional officers. The efficiency report has been scientifically improved, and a system for promotion by selection has been passed by the Congress. While time will be required to test the effectiveness of the new educational system and personnel procedures, the steps adopted so far are indicative of a desire to capitalize on the lessons learned in World War II, and to select the best qualified men for higher command and staff responsibilities.

So far so good, but the development of a competent commander or staff officer is dependent upon more than education and selection. The individual must be given an opportunity to exercise his talents under pressure. In other words, he needs constant practice under realistic conditions. That is the difficult feature to obtain in peacetime. The lack of troops,

runds, or facilities, and the demands of the moment, have been used too often as an excuse for a deadly cycle of routine training that seldom progresses beyond the stage of the yearly repetition of basic subjects.

Under such a system, attention to the minutia of garrison duty rather than performance under field conditions tends to become the criterion of excellence. The War Department, fully cognizant of this pitfall, developed the Army Ground Force Tests as a means of keeping the attention of the commanders and staffs of the smaller units focused on sound training objectives. These war-proved tests serve to place emphasis where it belongs, on performance under field conditions rather than upon appearance in the garrison.

But just what opportunity exists for continuous practical training at the higher command and staff levels? To be completely frank, it must be admitted that, except in the administrative field, it is distinctly limited. The number of staffs actively engaged in planning for large scale maneuvers or operations is practically nil. This may well lead to the same deficiency in training of our military forces which caused the criticism in the early part of the past war that we had good operators but too few trained planners. Therein lies a fundamental weakness which demands immediate attention if the army of the future is not to repeat the mistakes of the past. For it is only by constant examination of logical assumptions against a tactical background that the army can develop the requirements and techniques applicable to possible future operations. With this in mind, a critical analysis of the existing methods of simulating military operations for higher command and staff training is in order.

Desirable as extensive field training is, it must be recognized that, except in times of national emergency, the demands

it places upon the time of the members of the civilian components, and its cost, will drastically limit this type of training. This means that most applicatory training at the higher levels of command, especially that involving the joint services, will have to be conducted on a map. The recognized forms of such applicatory training on a map include: map exercises, map problems, map maneuvers and, in some instances, the command post exercise. The map exercise and map problem are especially valuable for training and testing the individual at a service school. They have the distinct advantage of making the terrain of the entire world available to the instructor to illustrate any desired principle. However, as usually presented, they are not particularly conducive to the development of completed staff action. The map maneuver and command post exercise have equal application to group training in the school system and in the service. Such group exercises afford an opportunity to establish sound procedures for handling the routine affairs of a headquarters and also serve to develop essential teamwork. Unfortunately the time devoted to such group exercises of necessity must be limited, as they require considerable overhead and full time participation of the players. As a consequence, little opportunity is afforded for completed staff action which requires logical assumptions, phasing, sound judgment, detailed coordination, and meticulous preparation.

It was realized at the Command and General Staff College that the planning staff as developed during the late war offered tremendous possibilities for more realistic staff training. It was decided, therefore, to adopt the planning staff as a vehicle of teaching completed command and staff action rather than the more conventional forms of map training. The only props required for an effective planning exercise are a situation, a logical set of

assumptions, experience factors, and a few requirements designed to emphasize any particular phase of military endeavor. By establishing several headquarters sections at different levels of command, it is possible to interject concurrent planning. Staff work then must consider not only the coordination between sections of the same headquarters, but also resolve the problems which arise between the various services and echelons of command. This frequently requires modifications of the original concept of the operation in order that obstacles discovered by subordinate headquarters can be surmounted. In this way, the full implication of administrative support, such as transportation or procurement difficulties, are forcibly brought to the players' attention.

As the whole set up is administratively simple, it lends itself to adoption by headquarters such as those of the six armies in the zone of the interior, which are engrossed in a daily routine. In order to carry out a planning exercise such as an operation in Alaska, it is not necessary to superimpose any umpire or communication system, or to set aside a specific period of time for play. In fact, the various sections of an army headquarters can develop their part of the plan as time is available for training. A few brief meetings of section chiefs will serve to keep the project alive and progressing along coordinated and logical lines. At a suitable point in the planning, other tactical headquarters and service installations in the area may be brought into the exercise and be required to contribute their plans for mounting the expedition. This would provide an opportunity for concurrent planning and would also serve to check the accuracy and practicability of the army plan. At a later date, a certain phase of the problem, such as the details of an assault landing, could be presented to the headquarters of the regular, national guard or reserve divisions

in the army area as an exercise in preparing detailed plans and orders. A final critique of a few days duration would provide a great incentive and would serve to point up the responsibility for maintaining a force in being capable of accomplishing its assigned mission.

Command and staff planning conducted in this manner not only maintains and develops the skill of the individual but also insures effective teamwork between the various echelons of command. It would also serve to develop a back-log of up-to-date planning factors that are not only applicable to contemplated field training but which are also instantly available in any future emergency.

In an article of this length, it is impossible to set forth all the measures which might be adopted to insure well rounded training for the commanders and staffs of the higher echelons. It is proposed instead to describe exercises presented at the Command and General Staff College which have proved very effective, and which are readily adaptable for use in the field.

The first exercise involved an assault crossing of the Missouri River, a terrain feature which was close at hand. It was realized that there are three important steps in such an operation, namely; the preparation, which includes training, collection of intelligence, and build up of the necessary troops and supply; the detailed plan; and finally, the assault. Since planning was to be emphasized, it was decided to write the problem to include only the development of a plan for crossing. In the absence of troops to execute the operation, this is the most interesting of the three steps, and, moreover, it provides the greatest opportunity for effective staff action.

The actual preparation of the exercise was not a difficult problem, as it involved only the setting up of an initial situation and the stating of assumptions. Techni-

cal intelligence was provided by the District Engineer in Kansas City, who furnished a wealth of information in the form of charts and pamphlets on the river. In order to interject realism and the play of intelligence, a two sided exercise was decided upon. This had the further advantage of creating rivalry which insured stimulating discussion at the critique.

The exercise was written to illustrate the planning as executed in two opposing corps; the Blue Corps which planned for an assault of the Missouri River and the Red Corps which defended a sector on the river. The planning of the Blue Corps was divided into two phases; an advance planning phase which represented the period from approximately D-30 to D-10, and a detailed planning phase, once Blue had closed to the river which represented the period from D-10 up to the assault. It is in the latter phase that the divisions and smaller units were assigned specific missions and required to execute their

planning. This parallels very closely, of course, the manner in which actual plans for such an operation would be developed. In the case of the Red Corps, which was given a mission of defending the Missouri River, it was unnecessary to divide the planning into phases. Since the greater part of the Blue planning occurred in the second phase, it was possible to have the advance planning which required less detail executed by a skeleton staff of students. The entire class was then made available for working out the detailed plans in the second phase.

#### Blue Situation

The exercise started with the Blues and Reds at war as shown on the map, page 38.

The superior Blue force slowly but steadily had been driving the Reds back into their own country. On 1 April the Blue Corps, which was the largest unit played, received the following letter of instructions:

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#### CLASSIFIED

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Auth: CG, Eighth Army  
Init : ABS, G-3

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Date : 1 April  
Eighth Army  
OTTAWA, KANSAS  
1 April 19----

SUBJECT: Letter of Instruction.

TO : CG, II Corps

1. The 22d Army Group launches operation AUSTIN, an all-out offensive on or about 25 April to destroy the Red Fifth Army. Eighth Army seizes crossings over the MISSOURI River in the vicinity of LEAVENWORTH and attacks to the northeast to capture CAMERON and destroy Red lines of communication.

2. IV Corps undertakes operations on or about 8 April to close to the MISSOURI River from POMEROY to the northwest.

3. VI Corps, upon relief by elements of the Tenth Army about 24 April, assembles in army reserve vicinity of RENO, prepared to exploit bridgehead seized by II Corps.

4. II Corps will train, plan and prepare to cross the MISSOURI River in the vicinity of LEAVENWORTH in order to establish a bridgehead for Eighth Army.

5. Planning will be based on the following assumptions:

a. Target date not later than 25 April.

b. Corps will consist of one armored and three infantry divisions.



- c. Blue will have local air superiority.
- d. Sufficient engineer equipment will be available for II Corps to cross six infantry battalions simultaneously and to establish four M4A2 ponton bridges.
- e. Adequate logistical support will be available.

6. Plans for the conduct of the operations will be submitted to this headquarters on or before 18 April.

JONES  
Gen

OFFICIAL:

/s/ Smith  
G-3

There was also an engineer annex which accompanied the letter of instruction and gave certain important engineer information such as technical intelligence, allocation of equipment and prospective locations for army bridges. With this information, the Blue Commander was then ready to work his first requirement.

#### Blue Requirements

At the end of the first phase of the problem, the Blue Corps commander was required to furnish a tentative plan and present his concept of the operation in sufficient detail so that detailed concurrent planning could be initiated.

A new situation based on logical developments then was presented. This latter situation is shown on the map, page 39.

The Blue Corps then was presumed to be committed to action. Opportunity was provided for terrain reconnaissance before requiring the completion of the following detailed plans.

##### a. G-3 Plan

- (1) Field Order and Annex 1, Operation Overlay.
- (2) Recommended time and date for crossing.

(3) Tentative plans for employment of 6th Armored Division and 20th Infantry Division on far shore.

##### b. G-2 Plan

Annex 2, Intelligence.

##### c. Field Artillery Plan

- (1) Annex 3, Field Artillery.
- (2) Memorandum to control use of variable time fuze in corps zone.

(3) Recommendations relative to crossing corps artillery.

##### d. Engineer Plan

- (1) Annex 4, Engineer.
- (2) Field Order, 501st Engineer Combat Group.
- (3) Field Order, 502d Engineer Combat Group.
- (4) Overlay showing recommended bridge sites.

##### e. Air Plan

- (1) G-3 Air. Overlay to show missions to be requested and priorities. Distribution of TACPs.
- (2) G-2 Air. Overlay to show requests for photo coverage and reconnaissance missions.

##### f. Signal Plan

Annex 5, Signal.

##### g. Antiaircraft Artillery Plan

Annex 6, Antiaircraft Artillery. (Position overlay to show location of all batteries, density of coverage, the AAAIS installations for the corps area, radar coverage and schedule of operation.)

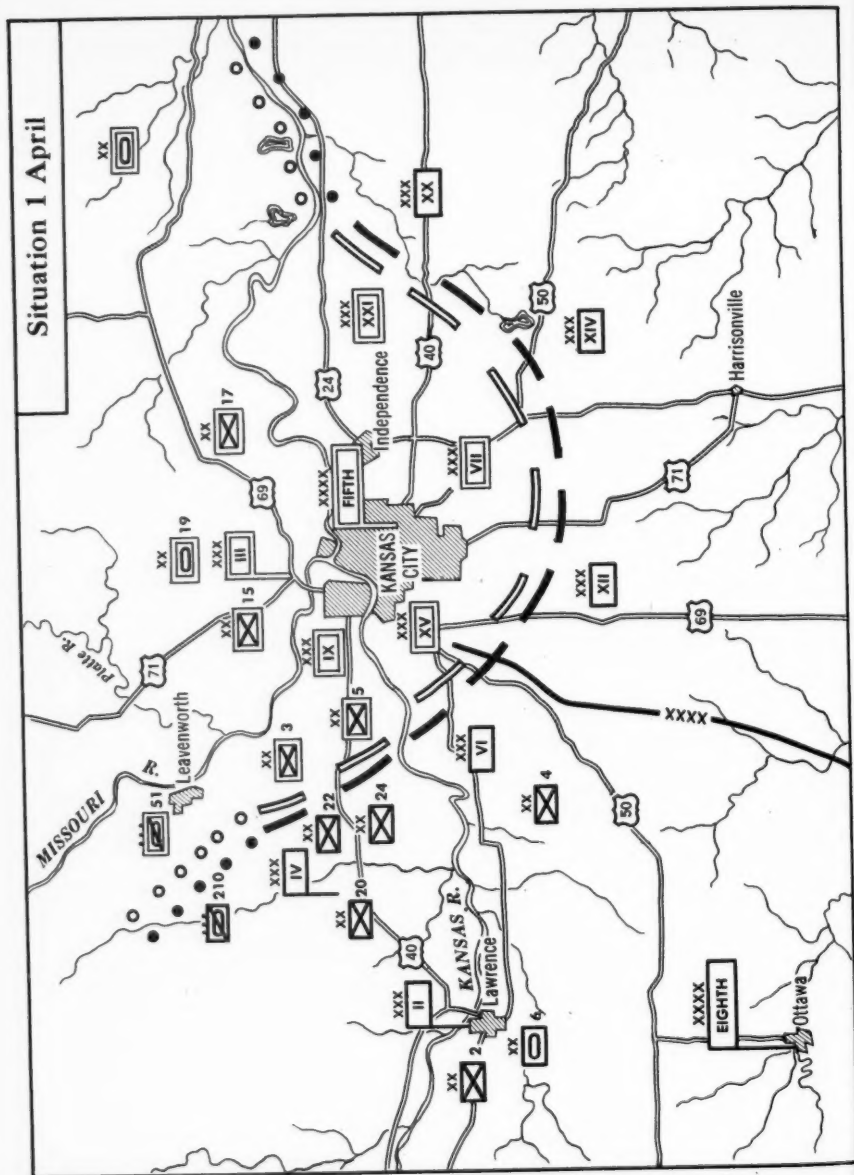
##### h. Chemical Plan

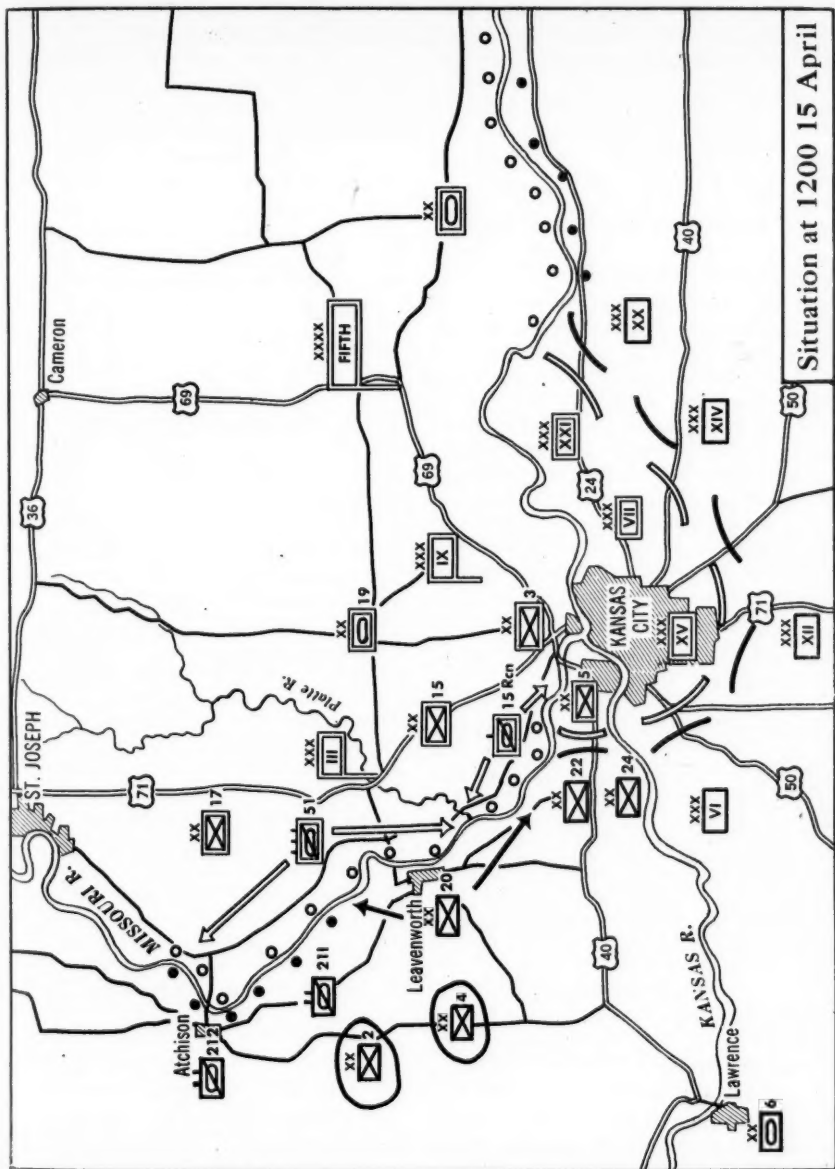
Annex 7, Chemical. (Include provisions for coordinating use of smoke.)

##### i. Administrative Plan

- (1) Traffic Control Plan. (Include provisions for control of traffic moving into division areas.)
- (2) Recommend location, type, number and stockage of army supply points to serve II Corps.
- (3) Recommend location for supporting evacuation hospitals.

## Situation 1 April





(4) Recommended location of corps rear boundary.

(5) Prepare Military Government plan for St. Joseph.

(6) Select location of the following from a map, verify by reconnaissance and report to Eighth Army:

(a) 2181st Replacement Battalion.

(b) Army cemetery to be used by II Corps.

(c) II Corps Prisoner of War Enclosure.

(d) II Corps Command Post.

Except for more emphasis on administrative plans, similar requirements were set up for the assault divisions. The armored division which was in corps reserve and the infantry division which screened the river were required to make appropriate plans for their eventual employment. It is immediately apparent that these requirements demand concurrent planning at the corps and division level as well as coordination between staff sections.

### Red Situation

In order to provide a source of timely intelligence for the second phase of the Blue planning, the original situation presented to the Red Corps required an early deployment of forces to defend the Missouri River. The Red Corps mission was so stated that the sector of one of its two infantry divisions was located in the zone of action of the Blue Corps; while the armored division was held in corps reserve. Of the three divisions in this corps, only one infantry and the armored division were represented by players.

### Red Requirements

The first requirements for the Corps staff was to complete the following:

a. Attach troops to divisions as desired.

b. Submit missions to major units.

c. Submit the G-3 periodic report which covers the movement of major units to their defensive positions.

d. Prepare an overlay showing the final disposition of major units.

At the same time, the Red Infantry Division was required to submit an overlay of all installations to corps showing dispositions to include companies, batteries, division command posts, prisoner of war enclosures, civilian enclosures, and straggler installations.

In the final requirement, the Red players were asked to complete the following detailed plans for the corps and divisions:

a. Annex 1, Intelligence to FO.

b. Annex 4, Artillery to FO.

c. Two counterattack plans for employment of the 19th Armored Division in the sector of the 15th Infantry Division.

d. Overlay showing photographic and other air missions requested for 18 April.

e. Administrative Plan.

These requirements, although less detailed than those of the Blue forces, required concurrent planning at different levels and also coordination between staff sections. One important item was the requirement that the Red Corps submit a periodic report covering the movement of major units to their defensive positions. This gave the Red players maximum freedom to dispose their troops within the limits of time and space, and avoided the necessity for establishing a "canned" situation in setting up the problem. At the same time, the report and overlays provided a source of intelligence from which the Blue Corps was furnished appropriate items. Another important requirement was that Red Corps develop counterattack plans. This also required concurrent planning by the corps headquarters and by the armored division, and at the same time stressed this important part of defensive operations.

### Critique

At the conclusion of the exercise, a full day was provided for discussion of the completed plans. Students were required

to present selected aspects of the planning, and interest was stimulated by competition as well as faculty comment on the results achieved. In the critique, it was readily apparent that the idea of staff coordination had been impressed on each student. He was made to realize that not only what he does must be coordinated with the planning in other sections, but also the work of other members of the staff and the planning of subordinate units are affected by his planning.

A good example of this was offered by the development of the engineer plan. One of the first things the engineer did was to gather intelligence and to decide on the suitability of various crossing sites. This information was then made available to the commanders and G-3s so that the tactical plans could be decided upon. In some cases it was necessary to shift the point of crossing which was desirable from a tactical viewpoint in order to avoid insuperable or extremely difficult technical problems. At any rate, the technical aspects were considered along with the tactical lines of action in arriving at the plan which was most economical in time, personnel, and equipment. This same engineer intelligence was made available to the G-4 for use in his planning for traffic control and movement of service installations. It was used also in developing the plan for far shore build-up and evacuation.

Although a wealth of material was made available to the planning staffs, no attempt was made to sift it down and give it in the form of intelligence. It was felt that it would be far more realistic to give the information in the form in which it normally becomes available, and to require the students to consider it in the

light of their mission and determine what parts could be used.

By providing in the exercise for concurrent planning at the corps, divisional and regimental levels, it was possible to bring out other principles, such as the need for early allocation of such reinforcing means as artillery, tanks, and military police, as well as engineers, in order for planning to be promptly initiated in the lower echelons.

Stress also was placed in the critique on consideration of matters which had been a source of difficulty such as the integration of plans for air support, anti-aircraft defense and the employment of variable time fuze and smoke. An effort also was made to evaluate the employment of the latest developments, such as rocket battalions and infra-red illumination.

The exercise was highly successful, for it required realistic command decisions and completed staff action on many controversial matters. It was administratively simple and avoided the necessity for manufacturing intelligence, since it employed opposing forces and utilized a terrain feature close at hand. It not only gave the players a true appreciation of the manner in which a complex operation at the corps and division level is planned, but it served to weld a group of trained individuals into homogenous staffs.

An exercise of this type can be adapted readily for use in training the headquarters of an army and its subordinate units. It would, with a minimum disruption of routine business, train the staffs at the various levels of command to function as a coordinated whole.

The next article on this subject will develop the application of these same principles to the command and staff training of higher headquarters.

# Tanks and Infantry in Night Attacks

Lieutenant Colonel W. D. Duncan, *Infantry*  
Instructor, Command and General Staff College

NIGHT attacks have been employed by military leaders for centuries, but they have never been used as frequently as daylight attacks. Prior to World War II the use of stealth in night attacks was stressed. Stealth gave way to speed, fire power, and aggressiveness in many night attacks in the recent war. A great number of successful attacks were launched in which the artillery fired a concentration, and tanks with mounted infantry advanced rapidly, all guns firing. This type of night attack is the antithesis of that in which the infantry attacks silently, without an artillery preparation, and dispatches the enemy with the bayonet.

A soldier untrained in night warfare has an inherent fear of darkness and of the unknown which results in a great lack of confidence. He thinks darkness is his enemy. Training in night combat or participation in several successful night attacks will aid the soldier in overcoming a great deal of his fear, and will cause him to realize that the darkness is a silent friend, ready to help him.

When the average American soldier has been properly trained in both daylight and night operations, he will prefer to attack over open, flat terrain under the concealment of darkness rather than in the light of day. Well planned and well executed night attacks reduce casualties, surprise the enemy, maintain the impetus of the attack gained during daylight, and raise

the morale of the attacking troops while lowering the will to resist of the defending forces.

During the latter part of the North African Campaign, the British adopted night attacks as the normal method of attack. In moving from El Alamein to Tunis, every major British assault was launched at night. As the war continued, the night attack became more and more common with United States divisions. In Italy and France the 3d U.S. Infantry Division adopted the night attack as a standard procedure and became very skilled in its execution. They concluded that, except for the degree of control needed, the procedure of planning and executing a night attack was essentially the same as in a daylight attack.

In Holland and Germany the 104th U.S. Infantry Division launched over one hundred night attacks, all of which were reported by the division as being successful. These excellent results were achieved because the division commander believed in night attacks and had stressed them in the training of his division before it entered combat. The 30th U.S. Infantry Division had similar success with night attacks in France, Belgium, Holland and Germany.

Nor was the enemy without success in night attacks. The Germans, confronted with allied power and artillery superiority, chose the night attack as a means of



attempting to regain the initiative. In the Pacific, the clever night penetrations and infiltrations by the Japanese in the early years of World War II were responsible for many of their initial successes. Later, the night attack was used by the Americans in the Pacific to seize strong positions when the Japanese withdrew their main forces at night to avoid artillery fire.

Night attacks were found to be very successful when the infantry was supported by tanks. The approach of infantry and tanks in the concealment of night caused terror and a feeling of helplessness among many soldiers. This was especially true when the tanks and infantry advanced rapidly at night using assault fire. This method of attack was often used in the capture of small villages which were used as strong points by small, determined enemy forces. The attack usually began with a heavy artillery concentration which included rounds of white phosphorous to set the village on fire and to mark the objective. Then the assault units advanced rapidly, the infantry mounted on the tanks. The tanks fired machine guns and cannon as they advanced toward the burning objective. However, one must realize that tanks can be used successfully in this method of attack over suitable terrain only, and when the tank commander can see at least fifty yards to his front. There must be close cooperation with the infantry.

In the future, we may expect night attacks to be as commonplace as daylight attacks. Therefore, in order to insure an improvement in our methods and in the techniques of night combat, we must emphasize night operations in our future training programs. It is desirable that, at the outbreak of any future conflict, we have officers thoroughly trained and indoctrinated in night combat.

To become experts in night warfare, troops must train many hours under black-

out conditions and must participate in all possible types of night operations. Tanks, infantry, and artillery must train together, each with a desire to develop the most efficient means of cooperation and coordination in night attacks and in night defense. The absence of night training will force units to experiment during combat, often at a great price, in an effort to achieve a measure of success.

An excellent example of what can be accomplished in night attacks by units which have fought together for nearly a year was demonstrated by the 30th U.S. Infantry Division and two attached units, the 743d Tank Battalion and the 823d Tank Destroyer Battalion, during the nights 25-26 and 26-27 February 1945. During these two nights the division attacked along a 6,700 yard front with two regiments abreast, penetrated 9,800 yards into enemy territory, and captured eight villages defended by German *panzer* troops. The attacks took place over flat farm land consisting essentially of beet and stubble fields which were illuminated by a very dim moon. The attack moved parallel to and slightly in rear of, the enemy main battle position, exploiting a penetration made by the division between Julich and Duren on the night 23 February.

On the night 24-25 February the enemy defenses along the Roer River were reinforced by the 9th and 11th *Panzer* Divisions. Elements of these divisions occupied the towns in the division zone of advance.

The 30th Infantry Division caught elements of the *panzer* divisions in the villages before they were able to orient themselves in the fast changing situation. The 30th Division moved rapidly during daylight 25 February into the villages of Rodingen and Hollen and occupied Steinstrass by 1600. See Figure 1.

At this time it was decided that the best way for the division to gain its objec-



tives, and to prevent the enemy armor from making a coordinated counterattack, was to continue the attack as soon as possible. However, attacking the villages over the open terrain in daylight would have been costly. Consequently, the division began a series of night attacks which completely broke the enemy resistance along the entire XIX Corps front, thus materially aiding the advance of the 29th Infantry Division and opening the door for the 2d Armored Division to race out over the Cologne Plain towards Düsseldorf and the Ruhr.

### General Plan of the Attacks

The general plan for the night attacks called for continual assault throughout the night by the division. The regiments were expected to assault and capture one objective between the end of twilight and midnight, and another objective between midnight and dawn. Normally at least three infantry battalions with attached tanks and tank destroyers were attacking during the night in the division zone of advance. In some cases the same infantry battalion took one objective before midnight and passed on to take the second before daylight, while in other cases, one infantry battalion took a village before midnight and a second infantry battalion with its tanks passed through to take the second objective between midnight and dawn. See Figure 1.

During these night assaults by the 117th and the 120th Infantry Regiments, they were reinforced by the following armored units:

#### 117th Infantry Regiment:

Attached:

743d Tank Bn.

Co C 823d TD Bn.

#### 120th Infantry Regiment:

Attached:

744th Tank Bn (L).

Co B 823d TD Bn.

### Details of the Night Attacks

The details of two of the four night attacks made by the 117th Infantry Regiment during the nights 25-26 and 26-27 February illustrate one method by which tanks and infantry can attack successfully together at night.

During the night, 25-26 February, Lich and Oberembt were captured. Warning orders for the attack on these villages had been issued immediately after the capture of Steinstrass by the 3d Battalion and the attack order was issued at 1800, 25 February. See Figure 2.

*a. Attack on Lich.*—A heavy artillery concentration was placed on the village at 2145 (H hour). An assault company of the 2d Battalion, 117th Infantry, mounted upon the tanks of Company A, 743d Tank Battalion, advanced rapidly due north from Steinstrass. A second company of infantry followed in column on foot. The remainder of the battalion furnished fire support from Steinstrass. When the assault elements, moving forward at about five miles per hour, arrived within 100 yards of the village, the infantry dismounted and the tanks began to pour cannon and machine-gun fire into the objective. Then the assault elements moved into the village. By midnight the attacking elements of the battalion had cleared the town of enemy, had organized the pre-planned defense, and had repelled an enemy tank and infantry counterattack.

*b. Attack on Oberembt.*—The regimental order stated that upon the capture of Lich the 117th Infantry Regiment would prepare to continue the attack at 0400, 26 February, to seize Oberembt prior to daylight, 0700. See Figure 1.

Formation for the Attack: 1st and 2d Battalions abreast, 1st Battalion on the right. The assault force consisting of two infantry companies attacked abreast, the assault platoons of each mounted on a platoon of tanks advancing abreast.

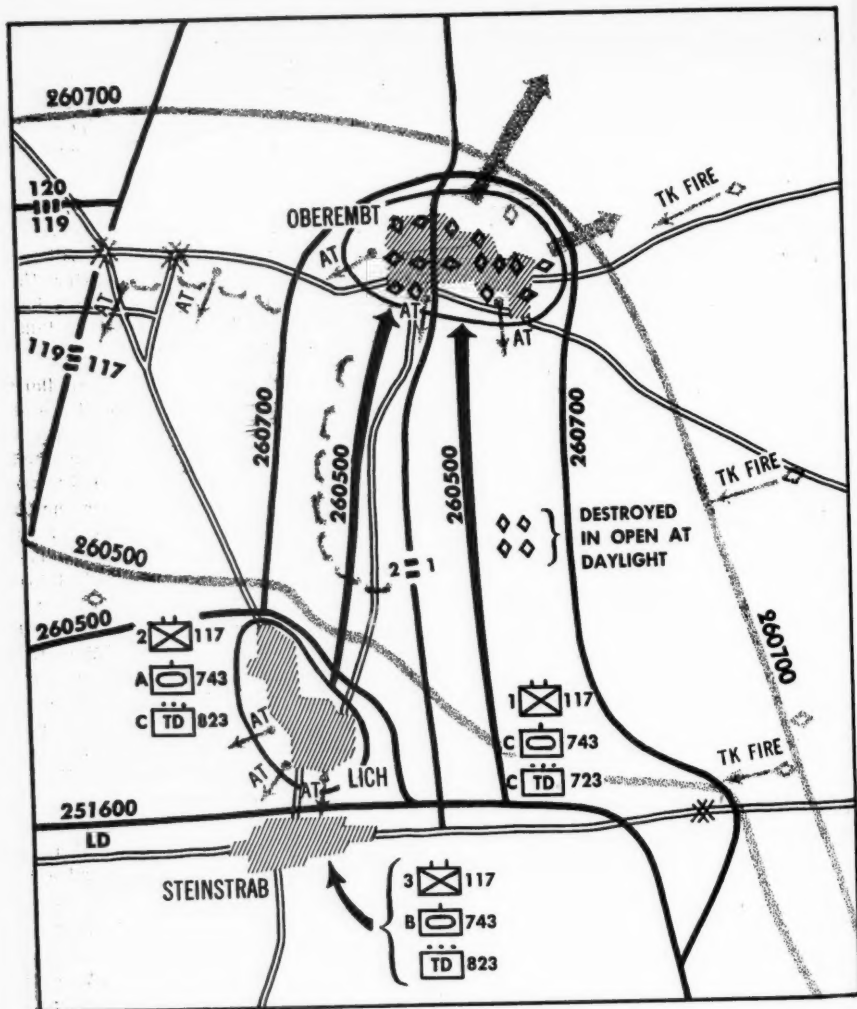


Figure 2.

Remainder of assault companies advancing on foot in column.

The 2d Battalion used the same formation as that used in the attack on Lich with different infantry mounted on the assaulting tanks.

A section of TDs and the tank company commander moved with the assault company on the right flank.

The reserve force consisted of the 3d Battalion minus.

Artillery and Supporting Fires: 2400-

0400: Intermittent fire by infantry and tank mortars, tank assault guns, and by the 118th Field Artillery Battalion in direct support of the regiment; 0400: "Time on Target" by division artillery with occasional rounds of white phosphorous to mark the objective; "On Call"—heavy concentration to be placed on the objective or lifted on call of assaulting forces; a box concentration available to box the objective in case of enemy counterattack.

Control and Communications: Since the assaulting infantry platoons rode on the tanks to within 100 yards of the village, the initial control of the assault elements was simple. The tanks were guided to the objective by the burning buildings in it, and by the main roads leading from the line of departure. With this arrangement the infantry soldier, once mounted on the tank, could not become lost in the darkness, and the infantry following on foot could easily guide upon the tank tracks in the soft fields and upon the burning objective.

The infantry assault platoon leader rode in the platoon command tank with the tank platoon commander. They could discuss the situation as they advanced, and by infantry radio or tank radio could speak to all the other platoon leaders, to each tank in the platoon or company, to the tank company commander, and to the infantry company commander. With such a communication system available to each assault platoon leader it was almost impossible to lose contact between units.

The control of the units in night fighting was also safeguarded by detailed pre-planning. Excellent aerial photos, aerial mosaics, and 1:25,000 scale maps were available to all commanders down to and including the infantry and tank platoon leaders. Infantry platoon leaders and tank platoon leaders had carefully studied their routes of advance and had prepared the plans by which they would clear the enemy

from the parts of the village assigned to them. They also studied and selected the defensive positions to be occupied on the perimeter of the village after its capture.

Conduct of the Attack: The 1st Battalion moved east at 0200 from Steinstrass to deploy along the highway which was to be the line of departure. While this movement was under way, a German tank and several armored personnel carriers, with German infantry concealed by the darkness, made a surprise attack on the 1st Battalion. The surprise resulted in a scattering into the darkness of the leading companies. Then a tank destroyer in a defensive position on the outskirts of Steinstrass destroyed one of the attacking personnel carriers with a direct hit, and the enemy force withdrew to the east. The confusion resulting from the surprise attack delayed the jump-off until 0500.

At H-30 a tank platoon and two platoons of infantry moved along the highway to a position one mile east of Steinstrass and organized two roadblocks. While moving into position, this force encountered the enemy unit which had attacked the 1st Battalion just previously. After a brief encounter the enemy withdrew. Simultaneously with the jump-off, another enemy force, consisting of several enemy tanks and infantry, tried to drive through the roadblocks. Under the combined fire of the two infantry platoons and the tank platoon, the enemy withdrew hastily, leaving a burning tank behind.

Because of this protection on the east flank, the 1st and 2d Battalions crossed the line of departure at the new H hour of 0500, with all leading tanks carrying infantry and firing their tank cannons into the burning objective. The objective was well marked during the assault by occasional rounds of white phosphorous falling on it. The assault units of the 1st Battalion advanced rapidly over the flat, open ground in the dim moonlight with only an occasional round from an

enemy direct fire weapon attempting to locate them. The assault elements of the 2d Battalion encountered dug-in enemy shortly after leaving Lich, but the resistance was soon overcome when the infantry and tanks employed assault fire.

The assault units were within 1,500 yards of Oberembt before the leading tanks began firing their coaxial and bow machine guns. As the assault platoons arrived at a position 500 yards from the objective they requested the artillery to place a heavy concentration on the village and to continue it until the troops were within 100 yards of Oberembt. When the artillery lifted, the infantry dismounted from the assault tanks, and all tanks, firing their cannon and machine guns, advanced slowly with the infantry. The entire attack was so confusing to the enemy that they did not fire any of their defensive concentrations.

Once in the village, the tanks ceased firing except on request of the infantry who were busy mopping up resistance consisting of isolated and bewildered groups of enemy firing from houses and courtyards. The infantry and tanks moved swiftly to the parts of the town assigned to them, and upon cleaning out the enemy resistance, set up the previously planned defenses. Enemy tanks were encountered in the west end of town and were driven out. Two enemy tanks with their engines running were abandoned by their crews. While attempting to escape from the village a German self-propelled 380-mm assault gun mounted on a Mark VI chassis was destroyed at seventy-five yards by the 76-mm gun of a platoon command tank.

The advance to the village in the darkness was not without loss, however. During the darkness the command tank of Company C and another tank fell into adjacent bomb craters. On the way forward one tank of the reserve platoon and the T-2 tank retriever from company maintenance stopped to pull the two tanks

out of the craters. Unfortunately dawn came just as the last tank was pulled out. With the arrival of dawn came visibility for the enemy tankers and antitank gunners concealed along the exposed eastern flank. The enemy fired five rounds, quickly destroying all the armored vehicles and wounding the company commander. If the attack had begun at 0400 as initially planned these losses would have been avoided. With daylight, enemy artillery, mortar and tank fire commenced falling on the recently captured objective. One of the tanks of Company C moved to an exposed position at the perimeter of the village from which it could fire upon an observed enemy tank to the north, but was destroyed by a second enemy tank to the east before it was able to fire a round.

Results of the Night Attacks 25-26 February: In the night attack on Lich by the 2d Battalion, ninety-four prisoners of war were taken, many enemy were killed, one enemy tank was destroyed, several antitank guns were overrun, and a strongly held village was captured within two hours.

The attack by the 2d Battalion north of Lich was met initially by dug-in enemy. Forty enemy soldiers were captured, several were killed, and others fled into the darkness.

In Oberembt, elements of the 11th *Panzer* Grenadier Regiment and the 301st GHQ Tank Battalion were surprised by the assaulting force. This resulted in many enemy killed, and 168 captured. Two enemy tanks and an assault gun were captured or destroyed along with many antitank guns.

The losses to the attacking forces during the hours of darkness were negligible. The major losses occurred after daylight 26 February, and resulted in the destruction of four medium tanks and one tank retriever of Company C, 743d Tank Battalion. Without doubt, heavy losses would



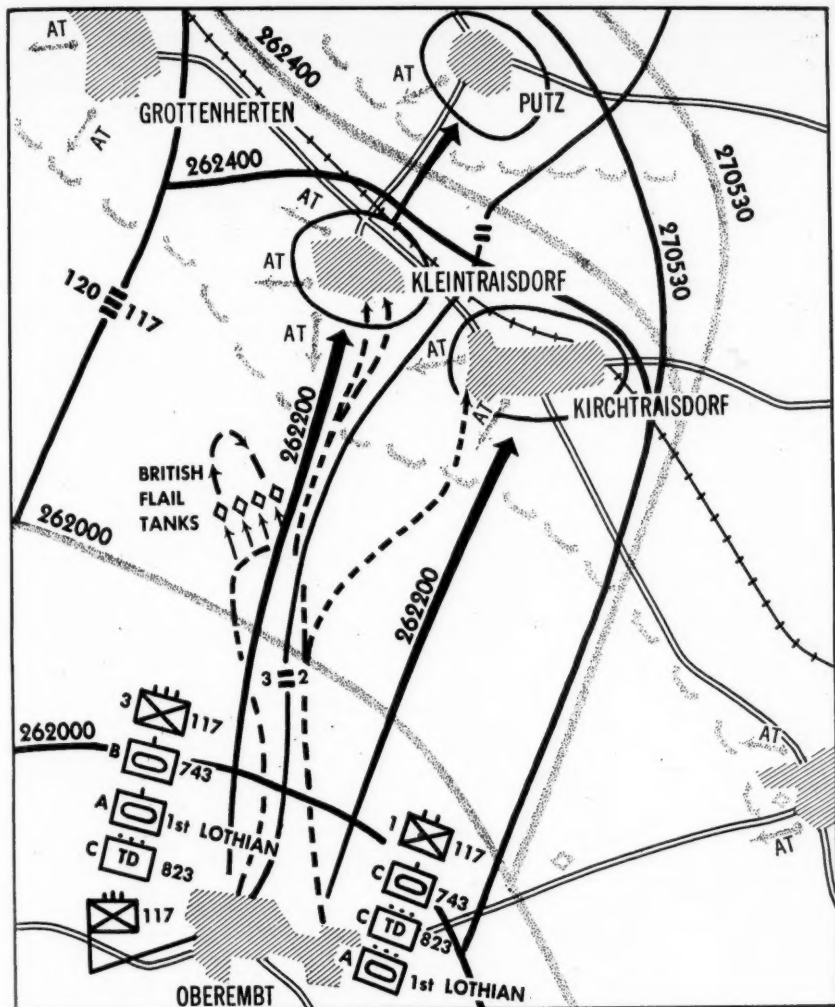


Figure 3.

have been inflicted on the assaulting force if the attacks had been attempted during daylight.

*c. Attack on Kirchtraisdorf, Kleintraisdorf and Putz.*—On the night of 26-27

February the attack continued and resulted in the capture of Kirchtraisdorf, Kleintraisdorf and Putz. Warning orders for the attacks on these villages were issued early on the morning of 26 Feb-

ruary, thus allowing time for necessary reconnaissance, planning, and preparatory moves. At 1800, the battalion commanders, tank company commanders, and the commanding officers of "A" Squadron, 1st Lothian and Border Yeomanry were briefed for the attack at the regimental command post in Oberembt. "A" Squadron was a British flail tank company attached to the 743d Tank Battalion for the purpose of breaching any enemy mine fields encountered. See Figure 3.

The artillery plan, the method of control and communication, and the conduct of the attack followed the same general pattern as the attack on Oberembt. However, several different problems presented themselves. First, the 3d Battalion with Company B, 743d Tank Battalion was in regimental reserve in Steinstrass, and had to move to Oberembt after twilight on the 26th and still attack in time to capture its objective before midnight. This meant marching 3,000 yards, assembling in an attack position behind the line of departure, and passing through another unit under the cover of darkness. Second, during the short period of time the 3d Battalion was passing through to Oberembt the entire regiment was concentrated in the small village and was exceedingly vulnerable to an enemy artillery concentration, or to having its line of communication cut by an enemy counterattack on Steinstrass and Lich. Third, the regiment was to attack two similar objectives less than 300 yards apart over some 2,700 yards of open terrain with two battalions abreast. Unless the assaulting units were carefully oriented and correctly led, the chance of attacking the wrong objective, or of attacking one another was very possible. Fourth, after the two objectives were captured, the regiment again had to "pull its tail up behind it" in order that the reserve battalion which had remained in Oberembt could pass through the 3d Battalion in Kleintraisdorf and attack Putz.

The 3d Battalion solved the first problem (a) by exceedingly detailed planning of the first forward movement, (b) by having all officers in the assault echelon make a personal route reconnaissance to the line of departure, and (c) by having all officers and key noncommissioned officers study the aerial photographs and 1:25,000 scale maps carefully in an attempt to remember all details of the terrain.

The division furnished the solution to the second problem by planning artillery fire on all known enemy artillery positions during the period of the move, and by moving an attached Combat Command of the 2d Armored Division into Lich and Steinstrass to protect the east flank and the regiment's line of communication.

Close control and an excellent communication system were the solution to the third requirement. However, detailed planning, a thorough study of aerial photos and maps, and the use of white phosphorous to mark the objectives were also of importance in maintaining direction.

A division order moving elements of the Combat Command into Oberembt when the regimental reserve moved out was the answer to the fourth problem.

In spite of the great care taken to insure that all major difficulties would be anticipated and eliminated as far as possible, one unfortunate accident occurred.

The 1st and 3d Battalions were to cross the line of departure at 2145, 26 February and attack northeast to their respective objectives. However, due to slowness in assembling for the attack, the 3d Battalion crossed the line of departure ten minutes late.

The 1st Battalion reinforced, moved along the road running north out of the northeast corner of Oberembt for about a mile when the assault tanks with the infantry turned northeast along another unimproved road that led to the objective. The four tanks of the British flail pla-

toon following the assault echelon missed the turn and continued north toward the objective of the 3d Battalion. The British platoon leader soon realized he was lost and turned to go back the way he had come. See Figure 3.

The 3d Battalion, echeloned to the left and ten minutes behind the 1st Battalion moved along the road running north from the northwest corner of Oberembt. When the lead tank platoon was half way to its objective, the platoon leader observed the silhouette of four tanks approaching his platoon from the direction of the burning objective. He ordered his platoon to open fire and they succeeded in destroying all of the approaching tanks which were later identified as the lost British flail tanks. Except for enemy resistance the battalion continued its attack and seized its objective without any further difficulties.

#### Results of the Night Attacks 26-27 February

The attacks on Kirchtralsdorf, Kleintraisdorf and Putz were successful. During the night over 100 prisoners were captured, many enemy were killed, and several antitank guns and vehicles were overrun. At daylight the remnants of an enemy infantry battalion crawled out of dug-in positions between the initial objectives and Oberembt and marched into Oberembt to surrender. These positions had been overrun during the night attack without opposition, the enemy in their terror preferring to hide in their holes rather than to fight. The prisoners were first class German soldiers.

The attacks on this night advanced the 117th Infantry Regiment more than 4,000 yards on a 2,000 yard front to capture three enemy villages that were defended by elements of two *panzer* divisions. The losses to the attacking forces due to enemy action were negligible.

#### Summary of Action

During the nights of 25-26 February and 26-27 February, the 117th Infantry

Regiment advanced 8,200 yards on a 2,000 yard front to seize five enemy held villages, to capture over 300 prisoners, to destroy or capture five enemy tanks, to destroy or overrun many antitank guns and miscellaneous vehicles, and to kill many enemy.

The 117th Infantry Regiment had less than thirty men killed in action and the 743d Tank Battalion and its attached flail company had four killed in action, four tanks and one tank retriever were destroyed by enemy fire after daylight, and four British flail tanks were destroyed by friendly fire.

The 120th Infantry Regiment with the 744th Tank Battalion attached, attacked on the night 26-27 in conjunction with the 117th, advanced over 4,500 yards, and seized the villages of Kalrath, Grottenherten, and Kirchherten against resistance by enemy armor and infantry. The losses of the 120th Infantry were less than those of the 117th Infantry.

In these historical examples the results show the advantage of night attacks over daylight attacks. This can be even better illustrated by an attack during daylight which took place the following day. The conditions except for visibility were identical with the conditions met during the night attack. Within ten minutes after crossing the line of departure Company B, 743d Tank Battalion, lost eight tanks. The 119th Infantry Regiment with its remaining attached tanks and tank destroyers fought for fourteen hours to capture a village similar to the ones captured within two hours in a night attack.

#### Lessons Learned

1. A well planned night attack in which tank-infantry teams are employed is less wasteful in lives, time, and equipment than are similar daylight attacks.
2. Tanks should be employed with infantry in night attacks if the conditions are suitable.
3. Artillery preparations should be used

at night when tanks and infantry attack as a team.

4. The line of departure should be secured prior to a night attack. The failure of the 1st Battalion to secure its line of departure for the attack on Oberembt early enough delayed the attack one hour and might have resulted in a failure to attack.

5. The execution of a night attack by the infantry and tanks should be fast and aggressive. During a night attack by tanks and infantry, speed and aggressiveness must not be curbed by an attempt to maintain secrecy. Stealth is not important in a tank and infantry night attack, because the noise of the tanks precludes it.

6. Thorough briefing and reconnaissance are essential. Reconnaissance will often be limited to a study of the map or an aerial photograph, or to long range visual reconnaissance from an observation post.

7. Proper control and a dependable communication system are vital.

8. The plan for the defense of the objective after capture must be worked out in detail before the attack. It must be exe-

cuted rapidly and prior to daylight. Each squad and tank must know, before the attack, its part in the plan for the defense of the objective when it is taken. In the attack on Lich and Putz the enemy counterattacked within an hour after the objective had been taken from them. The counterattacks failed because of the preplanned defense of the objective. Artillery defensive concentrations must be preplanned to box the objective in case of enemy counterattack.

9. If the objective of the night attack is a village, the attacking troops should attempt to pass through and secure the perimeter as rapidly as possible. Detailed clearing of enemy from buildings can be accomplished later.

10. Infantry-tank night attacks should be planned so that at least one objective is taken by the division before midnight, and a second objective before daylight. This should guarantee a deep penetration and a possible overrunning of enemy artillery positions. It will also disorganize the enemy defensive position and make the daylight attack the next morning less costly to our troops.

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We have learned that we cannot live alone, at peace; that our own well-being is dependent upon the well-being of other nations, far away. We have learned that we must live as men, and not as ostriches, nor as dogs in the manger. We have learned to be citizens of the world, members of the human community. We have learned the simple truth, as Emerson said, that "the only way to have a friend is to be one."

*Franklin Delano Roosevelt*

# Completed Staff Action

Colonel H. D. Kehm, *Field Artillery*  
Instructor, Command and General Staff College

ALL actions of a staff or staff officer should be characterized by soundness, timeliness and completeness. For the present we are concerned chiefly with the last-named characteristic. Ordinary military experience and training will enable an intelligent and alert officer to attain the other two. Applying the precepts of completeness helps. These basic precepts can be examined in the chronological order in which they are generally applicable.

First, when a staff officer is given a problem, he must make certain that he understands the specific mission assigned to him and the limitations, if any, on the scope of his task.

Second, having his mission clearly in mind, and before he formulates views on the problems, the staff officer should consult with other interested agencies and staff sections to insure that he will have a complete picture of background and salient factors upon which to base his own conclusions.

Third, he considers alternative lines of action and the favorable and unfavorable factors of each of them. He determines which is the most advantageous and ascertains the implications of that line of action on the responsibilities of other staff sections and agencies.

Fourth, he prepares a plan for implementing the line of action he proposes to recommend.

Fifth, he formulates his recommendations in line with the policies of his commander. When, under a given situation, the staff officer determines that adherence to established policies will bring on serious disadvantages, it is the function of the staff officer to recommend a line of action out of consonance with policy, and to show clearly the reasons for it. The staff officer must be objective and give both advantages and disadvantages of his recommendations. To secure approval of a recommendation by belittling or hiding the concomitant disadvantages is disloyal and undermines staff action.

Sixth, having evolved a sound plan, the staff officer *works out all the detailed steps required for implementation, including, where appropriate, the plan for supervision. These are an integral and necessary part of staff action.* Only when the preparations are such that the Chief of Staff can, at the same time, approve both the plan and the means for its implementation has staff action been complete.

Lastly, he reduces the results of his work to succinct and clear statements which present the essential facts, show that all alternative plans have been considered, indicate that the views of other agencies concerned have been studied, and give both the advantages and disadvantages of the recommended action.

In following the principles of procedure described above, the staff officer should be guided by what we might call rules of conduct. The more important of these relate to initiative, soundness and thoroughness, and are considered here in general terms.

The staff officer must not go to his commander with questions. He anticipates problems and submits recommendations. Where an unusual problem arises and no applicable policies have been formulated it is appropriate for the staff officer to go to his chief after he has made his study, but before all final details are worked out, and report that he proposes to present recommendations along a given general line. Such action is also appropriate where the net advantage of several lines of action are about equal and the decision may depend on personal inclinations or upon matters that involve the policy of

higher headquarters, with which the staff officer may not be acquainted.

As mentioned earlier, staff action is complete only when it is timely. Perfect orders and information are worse than useless when they arrive too late. Less ideal instruction and piecemeal information have often saved the day.

Finally, there must be a test for soundness. Only when the staff officer is prepared to stake his professional career on the practicability and soundness of his recommendation should he venture to put it before his chief for approval.

We might summarize these precepts by saying that the staff officer must make a thorough estimate, develop a plan and present it to his chief ready for final action and in the most succinct form. Whether the job involves written or oral recommendations or any other action makes no difference, the principles and scheme of procedure are the same.

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Just as we must at all times have coordination among the various components of the Army, such as between the Infantry and the Field Artillery or between the Ground Forces and the Air Forces, so it is also essential that we have complete, intelligent understanding and coordination between the Army and Navy in combined operations, especially landing operations. This, in my opinion, was achieved in this war only where unified command in the field existed. But such unified command did not emerge easily. It developed only after war had begun and then only after we had undergone trying and costly experiences.

*General Omar N. Bradley*



# Supply Problems in Polar Operations

Lieutenant Colonel H. R. Page, *Air Corps*  
Instructor, Command and General Staff College

THE Polar Regions, both Arctic and Antarctic, are currently drawing attention as possible locales of future military operations. Earlier attention to these regions has been primarily scientific, commercial or political in nature. Man's interest in the polar regions dates back to more than 300 years before Christ when a Greek, Pytheas of Marseilles, first attempted to conquer the frozen northern waste. According to record, he probably reached Iceland in the frail vessel of his day. In the twenty-two hundred years since his time, there have been numerous efforts to gain commercial and scientific knowledge of these areas. Most of these efforts were directed to the north or Arctic. Many famous early explorers sailed far into the north, some of them seeking a passage, the "northwest passage," above the continent of America. Practically all of the early exploration was by sea, the explorers remaining in their vessels and sailing north until stopped by ice, then returning to their home ports. In 1596 occurred the first recorded exploration of the ice cap, when a Dutch crew unintentionally spent a winter on the Arctic ice, their ship having become lodged in the ice and crushed beyond seaworthiness. In 1615, the idea of a sailable northwest passage was given up. In the seventeen years following 1725, a Russian expedition under a Danish explorer, Vitus Bering, first made extensive explorations within the Arctic circle. Bering was the

first to develop and profit from the Arctic fur trade, and thus opened up one of the commercial possibilities of the region. In 1832, man first reached the north magnetic pole, but in doing so, Captain John Ross and his party spent four long winters on the ice. And so, down through the years, man strove to obtain the farthest north and the farthest south for one reason or another, reaching a climax early in this century when two explorers, Peary of the United States and Amundsen of Norway reached the North Pole and South Pole respectively, in 1909 and 1911. The poles were first crossed by air in 1926 and 1929, the north by Byrd and Bennett, the south by Byrd and Balchen.

The two polar regions, the Arctic and the Antarctic differ materially. Both comprise vast regions of snow and ice, some 4,500,000 square miles each. The Antarctic is a continent. The Arctic is a sea, with continents converging from all sides. The Arctic, unlike the Antarctic, is peopled, and during certain seasons is the habitat of birds, animals, fish and some plants. Such life is not found in the Antarctic. Added to the problems created by the barren and ice conditions, the extreme low temperatures, and winds reaching gale proportions, is the problem of the long nights and twilight periods in the Arctic and Antarctic regions. For example, darkness at Point Barrow, Alaska extends over nine months of the year, with two months of night and seven

months of twilight. At Cornwallis Island, Canada, night extends to three months and more, with a twilight period of six and one-half months.

Military operations in these barren and frozen locales, both on the surface and in the air, will present many problems. An indication of the nature of such problems was gained during the Soviet-Finnish War of 1939 and 1940, and in our own World War II experiences in the Aleutians and in other Arctic and sub-Arctic



**Headquarters for Task Force "Frigid."**  
Development of adequate shelter is a major problem. (Signal Corps photo.)

localities. These experiences have recently been augmented by a series of training and development operations. Canadian and United States operations and the 1947 exploration of the Antarctic will provide a wealth of knowledge on which we can base our planning for possible future military operations in these regions.

Equipment and supply problems will be among the first to arise in this, as in any other, military planning. It is the purpose of this article to give a preliminary indication of what such problems might be and along what lines solution of these problems could possibly be effected.

#### **Equipment Problems**

In temperatures ranging downward

from minus 50 degrees Fahrenheit, clothing and other protection for the individual is the first consideration. Clothing, of course, must include not only body covering, but headgear, footgear and handgear as well. Clothing must be developed which will be suitable for use out-of-doors, in shelters, and in vehicles. The "layer principle" already in use adapts itself to such development. The first problem which arises is that of whether the clothing should be such as can be worn while operating present types of equipment, or whether our equipment should be modified so that it can be used with the heavy and bulky clothing which these extreme wind and temperature conditions necessitate. In other words, should we develop handgear which will allow us to pull the conventional rifle trigger, or should we develop handgear which is adequate for these temperatures, and modify the rifle so that it can be fired without exposing the trigger finger. The clothing must provide both a temperature barrier and a wind barrier. It must also be such that it can be easily adjusted by the wearer's heavily mittened hands. There can be no delicate fastenings, no hard to hold zippers, buttons, small cords or laces. The clothing must not be too bulky. It must allow considerable physical freedom and still give adequate warmth.

In most of our experiments to date, we have found that nothing we have been able to develop synthetically takes the place of natural caribou and wolverine skins. Even though it is the most desirable, natural fur would never be available in sufficient quantity to equip a large force, nor is it entirely suitable for people doing dirty work, mechanics and cooks who would spill fuel and grease on their furs. In view of these difficulties, both the United States and Canada are making an effort to develop fabric and synthetic materials out of which to construct Arctic clothing. However, we as

yet, have not been able to make fabrics wind-proof enough to stop winds of more than twenty-five miles an hour. We have not been able to develop a pile treated in such a way as to make it react like natural fur in shedding water and dirt.

Experiments have been conducted with several types of clothing, such as vapor barrier and insulated clothing. Vapor barrier clothing is developed on a layer principle. It can be further developed. Insulated clothing consists of layers of cloth with insulation such as fibre glass or other lightweight material between those layers. Many of our present plastic and synthetic materials will not withstand extreme low temperatures, and we are going to have to continue to develop plastics, synthetics, and metals as well, which will withstand extreme temperature ranges beyond what they now do. Not only must our Arctic clothing be developed to protect us from extreme winds and extreme temperatures, it also must be of material which will dry rapidly, so that at the end of the day's operations it can be hung to dry in a tent or shelter, and will dry quickly enough to be available for the next day.

A kindred item to that of providing clothing is, of course, the provision of shelter and heat. A great many types of tents, huts and shelters are being experimented with, most of them carrying insulation of one kind or another and practically all of them being constructed in layers of different types of cloth which have a high wind resistance factor. Inside the shelter we must have heat, and so far operations in the Arctic have indicated that we do not yet have a really economical high heat tent stove. Those which do provide adequate heat under low temperature conditions are much too wasteful of fuel for any extensive operations. Undoubtedly, a tent stove utilizing new, lighter, and more compact types of fuel can be developed.

Another closely related item is the mess kit. In the cramped and underheated shelter used in the Arctic, special mess and cooking kits must be developed which will lend themselves to small unit cooking with a minimum of steam. A simple pressure cooker might be the answer to this problem.

Many other items of equipment necessary for life in the Arctic will have to be provided: tobaggans, skis, and snowshoes will have to be manufactured and distributed in quantity. Special chests for carrying and storing supplies and equip-



Task Force "Frigid." Cooking in the field is difficult. Note clothing worn by the men. (Signal Corps photo.)

ment will be required. Medical items, for example, will require insulated and chemically heated containers. For living in the snow, building shelters and other work, snow knives, snow saws, light axes, and like items will have to be supplied in quantity. There will be the problem of camouflage on snow and ice, and the material to effect that camouflage will be needed. Another item which will present difficulties is the provision of economical equipment for reducing snow to water in large enough quantities to supply any appreciable troop unit.

In the past, operations in the Arctic have experienced a very high percentage

of matériel failures in plastics, rubber, synthetic materials, and metals. Continued research is necessary in order to develop materials of all kinds which can withstand severe low temperatures. Along with the problem of developing materials, we have that of developing items of equipment made out of materials which all have more or less the same coefficients of expansion. Clocks, cameras, watches, instruments—delicate machines of all kinds must be made out of metals which will expand and contract equally in order to



Task Force "Frigid." Efficient shelter heating is needed. Here is an improvised tent stove. (Signal Corps photo.)

maintain proper tolerances. Also, these delicate instruments must be lubricated with oils or greases which will function in extreme cold. Special oils, or perhaps some substitute lubricant such as graphite may be used.

A great many electrical problems will arise in developing equipment. Many batteries will not withstand the low temperatures, storage batteries and dry batteries both will have to be modified. Perhaps for some users, batteries can be replaced with small generators. Special low temperature ignition and starting systems will have to be developed for vehicles, these also avoiding the use of batteries wherever possible. With an eye to the

maintenance of this equipment, current experiments indicate that it will be necessary to design the equipment in such a way as to make practically all components removable. Within certain limits, no matter what the component might be, if it is susceptible to wear and tear and breakdown, it should be such that it can be removed from the major piece of equipment and taken into shelter where it can be worked on, and, when made serviceable again, then be reinstalled on the parent piece of equipment.

### Supply Handling and Supply Procedure

Present methods of supply handling and supply procedure will have to be considerably modified if we are to operate under Arctic conditions. In handling supplies we, of course, will have to provide cold protection as we mentioned earlier. Medical supplies are particularly susceptible to low temperature damage and will have to be stored in protective, insulated, and heated containers. Certain other items might benefit from the low temperatures. Rations, for example, could be prepared, cooked, and stored as a frozen slab until needed. This system would appear to be much better than freezing unprepared rations which later have to be thawed, cleaned, prepared, and cooked under difficult conditions.

In supply distribution in the Arctic, perhaps the biggest problem would be the establishment of, and, after establishment, the subsequent finding of supply points by using activities. With no roads and few landmarks, it would be very difficult for using activities to locate supply points at which to draw their supplies. Therefore, a modified type of unit distribution might be indicated. In Arctic operations to date, resupply has been accomplished by unit distribution, by air, to any moving columns. In many cases, this was done by dropping caches of supplies in advance at locations which could be quite easily identified by the troops on the surface.

In the event that unit distribution could not be accomplished, it would be necessary to train supply people to navigate to supply points—a very difficult procedure. We are beginning to get some indication of supply requirements based on consumption rates under polar conditions. It has been found that the largest item of the total supplies consumed on Arctic operations has been vehicle fuel, and that the next largest proportion of the total was also a Class III item; heating and cooking fuel. This latter item runs to about twenty pounds per man per day of a very high grade processed coal type fuel. Class I supplies are likewise consumed at a very heavy rate.

#### Movement of Supplies Overland

Movement of supplies in the Arctic presents another tremendous problem. Overland movement of supplies across Arctic wastes is much the same as overland movement across a desert. There are practically no limitations to which direction you can go when the surface is frozen solid. During periods of thaw, there is practically no movement overland unless it be by inland waterway. During the frozen periods of the year, most overland supply movement is accomplished by tractor and sled trains. Ordinary Diesel tractors pulling heavy bob sleds and heavy track trailers deliver the bulk of the tonnage. Such tractor trains can average eighteen to twenty tons or more per train over normal frozen trails. Many of our wheeled and tracked vehicles are proving not altogether suitable, they lack the necessary stamina for extensive Arctic operations. Tracked trailers intended to be towed by tracked powered vehicles have likewise been found unsuitable. Their place can be taken by cargo sleds, both light cargo sleds and the one-ton cargo sleds which are standard equipment in the U.S. Army. Development by ourselves and the Russians of motor powered sleds is an interesting indication

of what one of the solutions to this problem might be.

#### Movement of Supplies by Air

The difficulty of surface movement in the Arctic, and the almost total cessation of such movement during thaw periods, points to the solution of our supply problems by means of movement by air. However, this likewise has its problems. In the Arctic wastes, close to the magnetic pole, the problem of locating units to which supplies are to be delivered, navi-



Task Force "Williwaw." Emplacing a recoilless rifle in position for cold weather tests. (Signal Corps photo.)

gating to those units, and identifying them is extremely difficult. But with improved equipment we can find our drop or landing zones and accomplish delivery of supplies by one means or another. We can, of course, land an aircraft on a prepared strip; a strip prepared on lake or sea ice perhaps. We can deliver the supplies by parachute, by free drop or by glider.

Preparation of a landing strip on the ice has not proved difficult. Bulldozers can prepare an airstrip on ice, which can accommodate planes on both wheels and skis. Aircraft have landed regularly on strips of snow packed down by tracked vehicles. Planes can be

used with few modifications; stand-by heating and similar winterization would certainly be necessary, interchangeable ski and wheel landing gear would also be highly desirable. Parachute dropping of supplies has been experimented with a great deal. The major problem seems to be in combating the strong winds which often reach forty miles per hour and higher. With such winds, supplies dropped by parachute are bound to be scattered and a high percentage lost. This loss can be decreased by the use of brightly colored parachutes, which will enable recovering parties to spot them sooner. It can also be cut down by automatic quick release devices which release the canopy from the load as soon as the ground is touched and thereby prevent the parachute from dragging the load at a speed of thirty or forty miles an hour across the frozen terrain. Such devices are among the existing equipment which will have to be developed to a higher degree of efficiency. Under Arctic conditions, we cannot expect a very high percentage of recovery of parachutes and aerial delivery containers. This also will add complications to our supply problem.

In summary, the major problems in supply of polar operations seem to be: (1) to develop clothing and shelter for the

individual soldier, and to develop equipment which can be operated efficiently under polar conditions. A great deal of our equipment can be modified so that it can be used with bulky gloves and bulky clothing, and so that it can be repaired and maintained in a restricted space. The clothing for any large force will have to be of synthetic materials and special fabrics. It seems impracticable to envision sufficient quantities of natural fur to equip any large scale operation. In other items, the problem is one of developing materials and equipment which will withstand the extreme temperature ranges, and which are constructed in such a way as to minimize breakdowns due to unequal coefficients of expansion and contraction in the materials used. (2) To develop supply movement under extremely adverse conditions. This resolves itself very definitely in favor of supply by air. The present surface means, using tractors and sleds, are very slow, and deliver very low pay tonnages in comparison to the time involved and the amounts of fuel consumed. Supply by air, employing either air-landed supplies, free-dropped and parachute-dropped supplies, or glider-landed supplies, is extremely practicable, and the best all around answer to the problem of military supply movement in polar regions.

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**Modern warfare is anything but static. It is dynamic to the Nth degree, and he who relies complacently upon the weapons and methods of today may find himself suddenly overpowered by the super weapons and bolder systems of tomorrow.**

*General of the Army Dwight D. Eisenhower*



# MILITARY NOTES

## AROUND THE WORLD

### USSR

#### Air Assistance

Among the mass of war material and thousands of planes supplied to Russia under lend-lease were fifteen squadrons of fully-equipped Catalinas. The crews for these machines were trained in the United States. The equipment included the Norden bomb-sight and the latest airborne radar. All types of American and British airborne and ground radar were supplied to the Russians, and Russian crews were trained in England on the maintenance and operation of these sets.

The Russians have one type of semi-durable "Pobeda" already in use as an air transport. Production is about to commence on a second type, the "Patriot." This airship can be controlled by one pilot instead of the usual three or four. It is powered by two air-cooled engines of 145 horsepower with a reported speed of 100 kilometers per hour and an endurance of fourteen hours. It can carry 10-12 passengers.—*Journal Royal United Service Institution.*

### INDIA

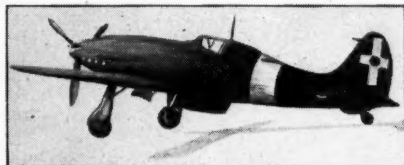
#### Demobilization

Through January 1947, releases from the Indian Army reached a total of 1,295,324 men and women, with 6,827 Army units disbanded. Demobilization in the Royal Indian Navy has reached nearly 20,000 men and women, the latter members of the WRINS, of whom 689 were released.—*Indian Information.*

### ITALY

#### Two Aircraft

A medium and high altitude Italian fighter is the Macchi C-205. It has a single motor, a single seat, armor plate protection, and mounts two machine guns



Macchi C - 205.

and two 20-mm cannon. A 12-cylinder Daimler-Benz liquid-cooled motor drives the three-blade propeller.

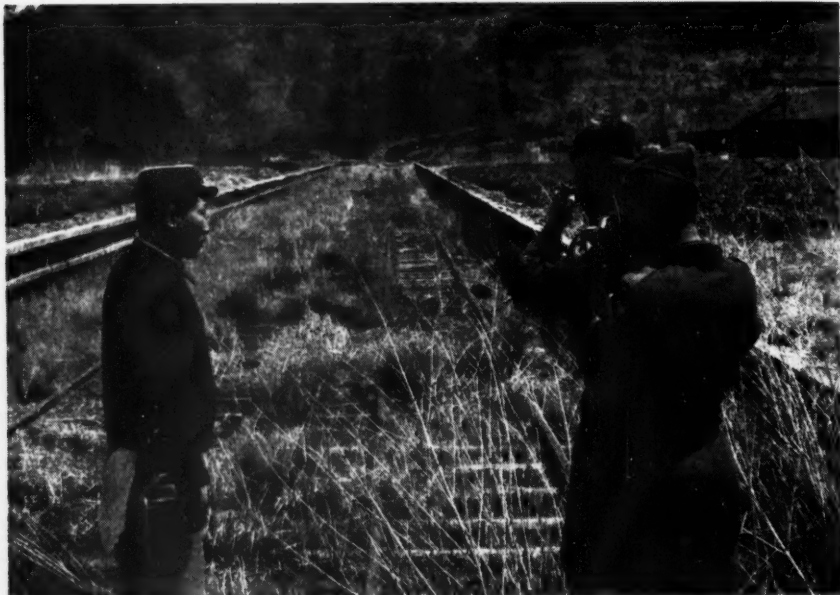
The SIAI Marchetti SM-93 is a dive-bombing and ground attack plane. The crew of two includes the pilot and an observer-gunner. Armament includes one



SIAI Marchetti SM - 93.

20-mm cannon, machine guns in each wing, and a machine gun in the observer's position. The motor and propeller are similar to the Macchi C-205.—*The Aeroplane.*

## JAPAN

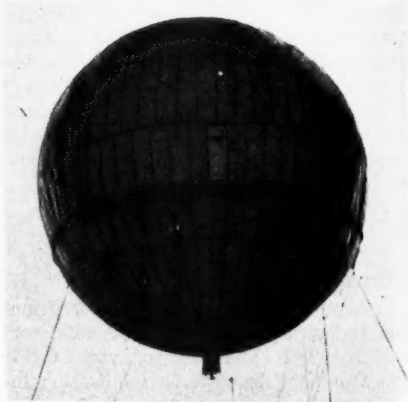
**Balloon Launching Sites**

During recent maneuvers, a reconnaissance party from the 1st Cavalry Division uncovered a number of launching sites for the Japanese balloons which were designed to cross the Pacific Ocean in free flight and drop explosives on the western areas of the United States.

Although these explosive-laden balloons proved largely ineffective, the launching sites discovered in Northern Ibaraki Prefecture, Otsu, Japan, showed extensive installations were used.

It is estimated that the Japanese government spent approximately \$200,000,000 on the project, which covered thousands of acres. During the period when the sites were operated, fishermen and farmers were evacuated from the region.

All that remains of this project is the abandoned rusty equipment and the high-

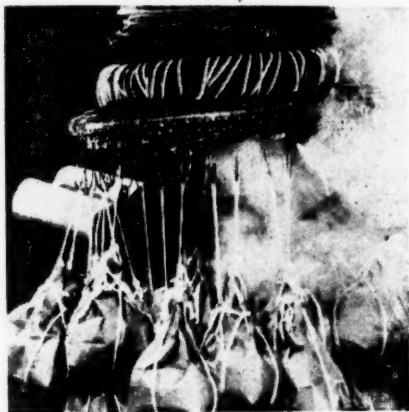


ways and roads leading to the sites, now overgrown with weeds.

In these pictures are shown some of

the balloon launching sites, equipment, and balloons used in the project.

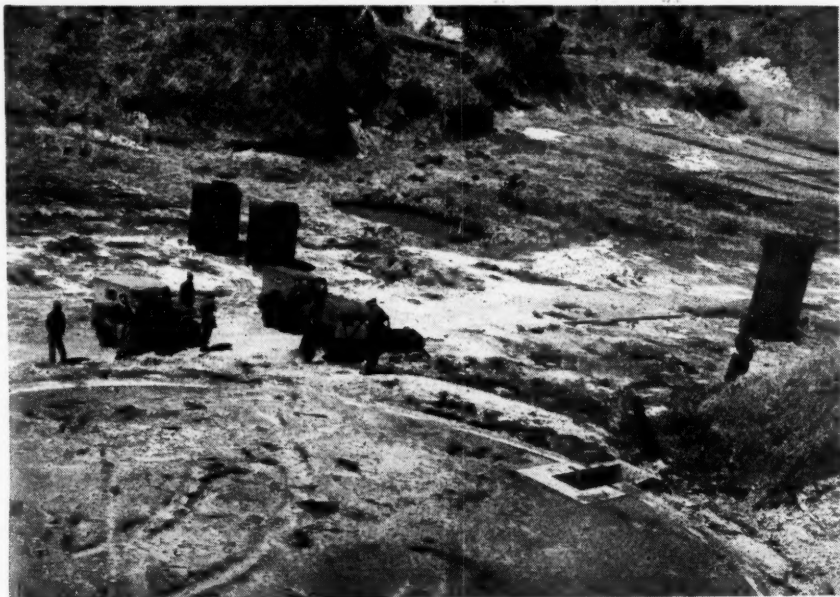
In the photo, at top of page 66, mem-



bers of a reconnaissance party examine railroad tracks used by trains which brought the silken and mulberry paper bags, chemicals, ropes, explosives, and hydrogen apparatus to the launching sites.

The other photo, page 66 shows a Japanese balloon, inflated for laboratory tests. Filled with hydrogen, it is 100 feet in circumference, and supports a "chandelier" with automatic altitude and bomb release controls. The photo at the left shows a close-up of the "chandelier," fully rigged, with an exploding fuse.

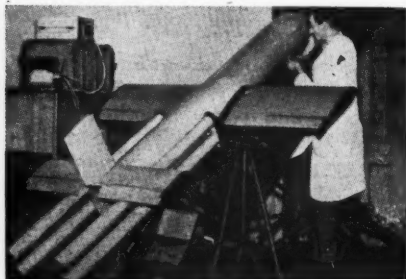
Below is a picture of one of the many sites from which the Japanese balloons were launched. In the foreground is a circular launching platform where the balloons were inflated, loaded, and released. In the background are remains of hydrogen generating tanks.—Signal Corps and AAF photos.



## GREAT BRITAIN

### "Stooge" Rocket

The "Stooge," first radio-controlled rocket missile developed in Great Britain, is considered a possible defense against bombers carrying atomic bombs. Four ex-



ternal rockets are boosters for take-off. The weapon has a range of about eight miles and a speed of over 500 miles per hour.—*Science News Letter* and *The Aeroplane*.

## CANADA

### Peacetime RCAF

The RCAF field organization has been whittled down to peacetime size. Field operations now will be directed from two air commands instead of five: Central Air Command, Trenton; and Northwest Air Command, Edmonton. No. 9 Transport Group will continue at Rockcliffe.

The RCAF's top command in Ottawa has been tightened up. There are four separate divisions: (1) Operations and Training; (2) Personnel; (3) Plans; and (4) Technical Services.

The Manning Depot at Portage la Prairie is closed. The Air Armament School moves to its former home at Trenton. Maintenance command at Up-lands is moving into Ottawa. Presumably the Test and Development unit will remain at Rockcliffe.—*Canadian Aviation*.

## NORWAY

### Air Agreement

Under an agreement between Great Britain and Norway, the Royal Norwegian Government will pay Great Britain 720,000 pounds Sterling for aircraft and equipment. Among the aircraft to be supplied are 47 Spitfires for day fighter squadrons, 18 Mosquitos, 20 Oxforths, 10 Ansons and 5 Mosquito IIIs for flying training. Additional equipment includes three Spitfire PR XIs for photographic flight, ground equipment, maintenance spares, spare engines, drop tanks, signal equipment, and 12 months peace-time requirements of bombs, ammunition and pyrotechnics, with two month's war-time reserve.—*The Aeroplane*.

## AUSTRALIA

### Adopt Jet Fighters

Vampire jet-propelled fighter planes have been selected as the fighters for the postwar Royal Australian Air Force. Already an order has been placed for 50 with the De Havilland Company plant at Sydney. The first Vampire jet fighter to appear in Australia was recently brought from England.—*Australian News Summary*.

## PANAMA

### Mapping Project

Three to five years will be required to map the Panama Isthmus under an agreement between the United States and Panama. The program includes aerial survey, topographic mapping, and hydrographic charting.

About one-sixth of Panama has so far been mapped, and the charting of the coasts by the United States Navy has been completed except between the Gulf of San Blas and Colombia.

The United States Army has completed reconnaissance from Chepo to the Costa Rican border.—*Army Times*.

## UNITED STATES

**Orthopedic Footwear**

Through arrangement with the Veterans Administration, veterans suffering from injured and deformed feet will receive the same service in orthopedic footwear as is being provided for Army personnel.

Improved types of orthopedic footwear have been developed by the Quartermaster Corps which not only afford better protection and support for feet that have been maimed by injuries, but present a more normal appearance. They are simple and efficient in design, and easy to put on and take off.

The new orthopedic footwear represents many months of painstaking research, experimentation, and testing. In this work, the footwear and leather research laboratory at the Boston Quartermaster Depot

had the cooperation of the footwear industry.

At hospital clinics, servicemen and veterans suffering from foot injuries or malformations are examined by medical specialists. Casts are made of the feet using new instruments which employ steel ball bearings held in place in a magnetic field. A mold of wax is shaped about the feet and a plaster of paris cast formed. A study of each injured foot reveals how the stresses shall be distributed for the proper protection of protruding bone or tender tissue. The casts are sent to the Boston Quartermaster Depot where all orthopedic shoes for servicemen and veterans are manufactured.—Office of the Quartermaster General; Signal Corps Photo.

### Tracked Landing Gear

Track-type landing gear are being tested on an Army Air Forces Fairchild C-82 Packet, twin-engine, 54,000-pound transport which has been adopted as the standard Army Air Forces troop carrier aircraft.

The C-82 is the first large Army Air

The tractor gear, sometimes referred to as the "flying runway," performs the same function as the belt-like tread on a tractor or tank. It was designed to eliminate the necessity of a surfaced runway and to enable heavy aircraft to land on soft dirt, mud or sand.

Ground-bearing pressures on the track-



Forces plane to use the track-type gear and the first to have a complete tricycle installation. In 1941 a track gear was installed on the main landing gear of a Douglas A-20 Havoc and tests with A-20s have been conducted to determine the requirements for structural loading needed for a similar installation on the Packet.

type gear are reduced from sixty to twenty pounds per square inch. The installation provides a wide tracked surface on the nose and on each main gear, all three of which are retractable the same as conventional wheel landing gear.

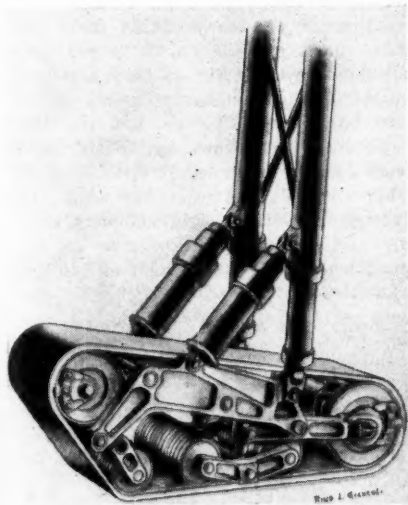
The actual weight of the track-type landing gear will exceed the weight of



the C-82's wheel installation by 275 pounds for the nose and 400 pounds for each gear. The new gear can be built on larger aircraft with from twenty to thirty per cent less weight than existing landing wheels.

A far-reaching effect on future military operations is possible through the use of the track-type landing gear. Air transportation of armies could be relieved of the time and effort-consuming task of airfield construction, thus permitting troops and equipment to be landed almost anywhere on the globe.

Experiments at Wright Field indicated it would be possible to parachute a bull-



dozer into a remote area to clear a landing strip sufficiently to bear the weight of planes equipped with the track gear with no need for further surfacing.

The track-type gear requires shorter landing space since the braking power is much greater than that of conventional wheels.—AAF photos.

### Airborne Arsenal

The Navy's carrier-based AD-1 Skyraider mounts twelve 5-in. and two 12-in. Tiny Tim rockets. The Skyraider is said



to carry a 6,000-lb load of munitions farther than any other plane of its type.  
—Aviation News.

### De-training War Dogs

Veterans of the Army K-9 Corps are being de-trained at Front Royal, Virginia. The dogs are taught not to show vicious



animation when taunted. As shown, a dog is restrained rather than encouraged to attack.—Signal Corps photo.

## Miscellaneous Notes

### Northern Bases

Two new air bases in northern areas of United States territory have been announced recently. In Aroostock county, Maine, in the extreme northeastern part of the nation, a \$14,000,000 base is being built to be finished by late 1948. At Mile 26, southeast of Fairbanks, Alaska, an \$8,125,000 Strategic Air Command base will be built, according to a War Department announcement.—News reports.

### Stand-by War Plants

Part of the War Department industrial mobilization plan calls for keeping forty-three war plants on a stand-by status for quick use in the event of national emergency. They include twenty-nine ordnance plants, thirteen chemical plants, and one Quartermaster Corps Station.—*Associated Press*.

### Advanced Study Group

The Chief of Staff recently revealed the existence of an Advanced Study Group composed of a board of three anonymous young officers whose primary duty is to form a picture of warfare, possibly as far as twenty-five years in the future. It is planned to have four members on the board, allowing a four-year tour, with rotation of one officer each year. The studies of the group are intended to indicate trends which will have an influence on war planning.—*Army and Navy Journal*.

### Crash Analysis

Four Army psychologists, in a study of the causes of fighter pilot crashes, found that the major reasons were: miscalculation of speed and distance; bad planning of the flight; not paying attention to the right thing at the right time; recklessness; and not reacting correctly to an emergency.—*Science News Letter*.

### Divisions Recognized

The recent decision to reactivate three infantry and one armored divisions to take the place of the Replacement Training Centers gives recognition to some of the Army's well-known combat divisions. The Center at Fort Ord becomes the Fourth Infantry Division; the one at Fort Jackson becomes the Fifth Infantry Division; and the one at Fort Dix becomes the Ninth Infantry Division. The Center at Fort Knox becomes the Third Armored Division.—*Army and Navy Journal*.

### Ration Tests

Regardless of whether he is in the tropics or the frigid zone, a soldier will want about one-tenth of his daily food to be meat or other protein, and from one-third to two-fifths to be fat, according to tests at the Army Medical Nutrition Laboratory, Chicago, and the Harvard Fatigue Laboratory, Boston. But more food is consumed in the colder climate. At 92 degrees temperature, the average soldier ate 3,100 calories daily, while at 30 degrees below zero the consumption was 4,900 calories.—*Science News Letter*.

### Underground Plants

A study is being made by the Army-Navy Munitions Board on the cost and feasibility of underground plants and storage facilities. Mines, rather than natural caves, will be considered.—*Army and Navy Bulletin*.

### "Eagle" Radar

An airborne radar, used with outstanding success against Japanese targets during the closing weeks of World War II, has been revealed by the Air Matériel Command. Called the "Eagle," the radar utilized a unique 16-foot linear antenna structure housed in an auxiliary wing carried beneath the fuselage of B-29s.—Air Matériel Command.

# FOREIGN MILITARY DIGESTS

## Final Offensive in Italy

Digested by the **MILITARY REVIEW** from an article by Lieutenant General Sir Richard L. McCreery in "Journal Royal United Service Institution" (Great Britain) February 1947.

GENERAL Clark's plan (for the Italian offensive in the spring of 1945) was to destroy the German armies south of the River Po by a pincer movement, the Eighth Army advancing on the general axis of Route 16 to Ferrara and Bondeno and the US Fifth Army attacking north through Bologna to the Po about Ostiglia. The Fifth Army was then to exploit to Verona—Lake Garda to cut off the whole of the Axis forces in northwest Italy, and the Eighth Army was to cross the Po and drive northeastward towards Venice and Trieste.

To enable the maximum use to be made of the Allied Air Forces, the attacks were to be staggered. The Eighth Army was to attack at least three days before the Fifth Army. General Clark also hoped that the Eighth Army attack would draw off any enemy reserves from the Fifth Army front. He regarded the Fifth Army attack as the main effort.

### Ground

The difficulties of ground confronting both armies were great. The Eighth Army in the Po Plain had several rivers with high flood banks to cross; the Senio, the Santerno, the Sillaro and the Idice were the chief ones. They all ran into the big river Reno, which was some fifty yards wide. There were also innumerable canals and irrigation dikes. On our right flank Lake Comacchio was only a few feet deep.

The hinge of the whole German defensive system was clearly the Bastia-Argenta gap. North of the Po the enemy had completely prepared another strong and much shorter line, the "Venetian" line between Lake Garda and the Adriatic. It is truly surprising that a withdrawal had not been made earlier to this economical position, but such a withdrawal was inconsistent with Hitler's strategy, and importance was still attached to the industrial and food supplies of Northern Italy.

The Fifth Army was confronted by an enemy with very strong mountain positions, where he had had many months to prepare and strengthen his defenses. On the other hand, once this first precipitous mountain ridge had been captured, the ground fell rapidly towards Bologna, and north of Route 9 the Americans would be able to exploit northwards between the rivers, rather than having to cross them, until the Po was reached.

### German Forces in Italy

When the Allied offensive started, the enemy still had twenty-one divisions in Italy. Because of the bombing of his lines of communications through the Alps, the Germans had been able to withdraw only three divisions and some five parachute battalions since the start of the great Russian offensive. On 9 April 1945, he had in the line sixteen German and one

Italian Republican division, with two good German divisions in reserve, and the remainder of his troops up in northwest Italy. The enemy was very thin in the mountainous western sectors, but held strongly from south of Bologna to Lake Comacchio.

The British Eighth Army had the German Tenth Army with the LXXVI Panzer Corps and I Parachute Corps opposing them, with eight divisions in the line and two in reserve.

#### The Eighth Army

The Eighth Army was an army of veterans with one armored division, three independent British armored brigades, two British infantry divisions, two Indian infantry divisions, 43d Gurkha Brigade, 2d New Zealand Division, the Jewish Brigade, 2d Commando Brigade, 2d Parachute Brigade, II Polish Corps (two infantry divisions, one armored brigade), three Italian *gruppo* (each of two infantry brigades).

#### The Cover Plan

The Germans naturally knew that an Allied offensive was certain in the spring, but we worked to make him think that it could not start early in April. His fears for his sea flanks were also played up. It was interesting that the Germans throughout the Italian Campaign always thought that the Allies would do more in the way of "sea hooks." Our preliminary operations before the main attack helped to increase this fear for his Adriatic flank, and a few days before the battle he actually moved one of his best divisions north of the River Po. Locally the Germans were led to believe that any Eighth Army attack when it came would continue on the axis of Route 9, like the autumn attacks. In the end I think a large measure of tactical surprise was attained.

#### Preliminary Operations and Final Preparations

The biggest problem for the Eighth

Army was how to force the extremely strong Argenta gap. We hoped to make use of Buffaloes on Lake Comacchio and the flooded country south of the lake to help outflank the position, but it was necessary first to turn the enemy off the long spit of land between the lake and the sea. The risk of losing some degree of surprise for the main attack had to be taken; in any case this preliminary operation helped the cover plan of drawing attention to the Adriatic sea flank.

Last minute training with the Buffaloes, or Fantails as we called these vehicles in Italy, was carried out in the swampy country northeast of Ravenna in conditions similar to those we thought we would find at Lake Comacchio.

The attack of the 2d Commando Brigade on the spit was carried out with great determination and gallantry on the night of 1-2 April with complete success. Great difficulties were overcome. The Buffaloes got stuck in the mud of Lake Comacchio; but two Commandos landed many hours behind time just before daylight on 2 April on the west shore of the spit from assault boats and storm boats. Each storm boat had towed two assault boats across the lake; even these boats had to be carried up to a mile, with men wading through mud up to their knees before the boats could be floated. After a night of this work, fighting continued all day. Another Commando landed from the sea flanks. By 3 April the whole of the spit up to Porto Garibaldi, with nearly a thousand prisoners from the Turkoman Division, over half of them German, was in our hands.

The other preliminary operation, again to assist in outflanking the enemy in the north, was to turn the line of the Reno by getting a firm base on "the wedge" before the main attack. This attack was carried out by the 56th Division on the night of 5-6 April. By early 7 April we had a good bridgehead up to the Canale

Umana, with a bridge over the Reno ready for the next right hook.

Our chief anxiety immediately before the battle was whether the enemy would pull out to the Santerno. There seemed so many strong reasons why he should do this and upset all our preparations. We know now that only Hitler's obstinacy stopped this local withdrawal.

On the other flank the Americans carried out a preliminary operation which led to the capture of Massa, when the enemy lost the last remains of his Gothic line positions. He reacted unexpectedly strongly in view of the deep mountain mass in front of the Americans in this area. A battle group of the 90th Panzer Grenadier Division was actually sent to reinforce this sector. Again he was apparently nervous of a "sea hook."

#### **Eighth Army Plan of Attack**

The main attack on a two corps front—V Corps on the right and II Polish Corps on the left—was to capture a bridgehead over the River Santerno to include Massa Lombarda. From this bridgehead, the main effort of the Eighth Army was to be either north through the Argenta gap or northwest towards Budrio, in conjunction with the American attack on Bologna. The operations on the right flank to try to outflank the Argenta gap were to be undertaken by the 56th Division and 2d Commando Brigade with the assistance of Italian partisans, who were very active in this area. The use of the 2d Parachute Brigade was also planned. South of the main attack, the X Corps, with the Jewish Brigade and Italian troops, were to carry out deception south of Route 9, and the XIII Corps was to hold Monte Grande firmly as a pivot and be prepared to move around to reinforce a thrust in the Po plain, if necessary.

Even if the attacks through the Argenta gap went well, General Clark wished the thrust to continue towards Budrio to as-

sist the Fifth Army operations. Therefore, when these attacks diverged, it was clear that one corps would probably concentrate on the Argenta gap and another on the right flank of the Fifth Army.

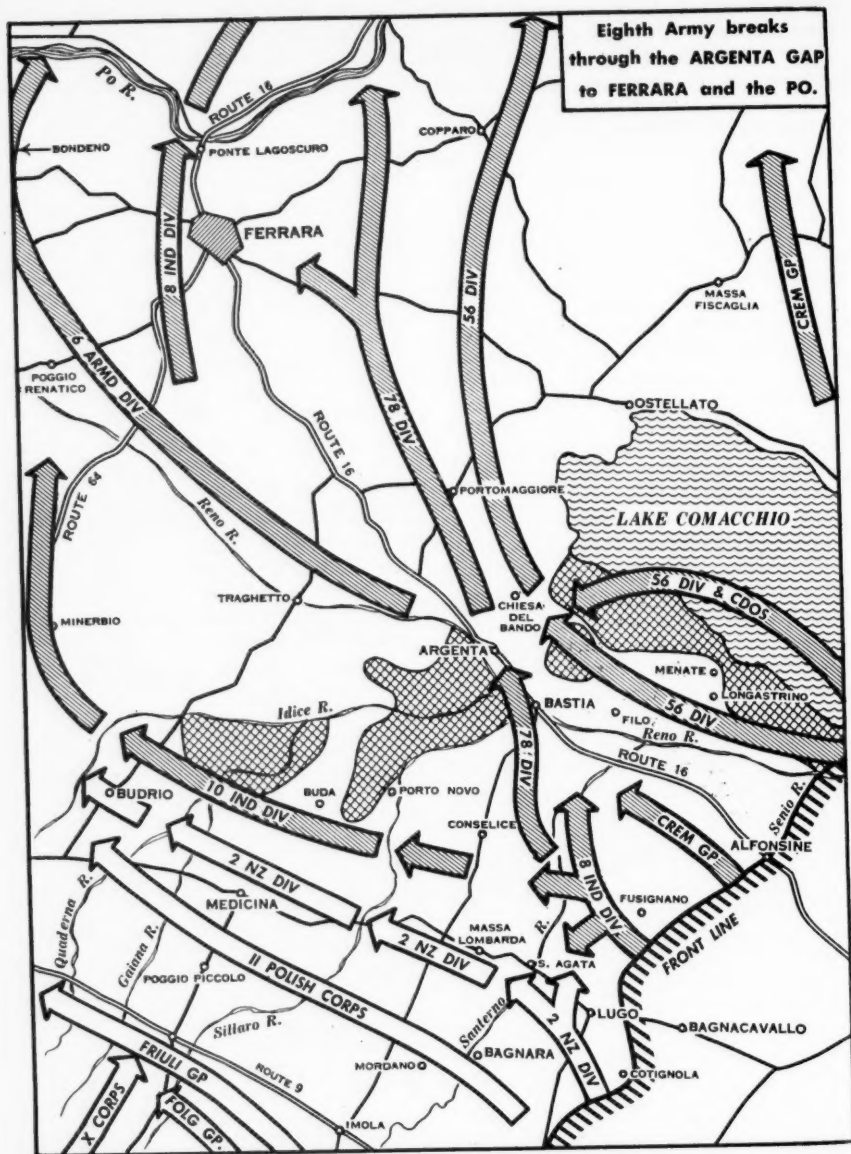
Throughout the battle the Eighth Army would have the support of the Desert Air Force, with years of experience behind it. For the two or three days before the Fifth Army attacked, the Eighth Army also had the support of a very large force of heavy bombers from the Fifteenth Air Force and a large force of medium bombers from General Cannon's Tactical Air Force, in addition to fighter-bombers which normally supported the Fifth Army. For the first time, we also had a large night bomber effort.

Great emphasis was laid on keeping up the pressure by night and day once the offensive had started. To help this, orders were issued that full advantage must be taken of the low state of the rivers and the drying ground to get across the first tanks and other supporting arms. Later, high level, more permanent Bailey bridges were erected.

#### **Plan for the Main Attack**

Zero hour for the infantry to cross the Senio river was 1920—about one hour before dark. Preliminary air and artillery bombardment started at 1330 on 9 April, with 700 heavy bombers laying a carpet of fragmentation bombs about three thousand yards west of the river on the front of the II Polish and V Corps. Lugo was not bombed. For this new use of the heavy bombers in Italy in close support of the ground forces, every navigational aid was employed and most of the bombing was extremely accurate.

After the heavies, the artillery softening program started from over 1200 guns. This artillery program was arranged in five intensive periods of about twenty minutes each, and in the intervals large forces of fighter-bombers carried on the attacks, and many squadrons of medium





bombers attacked the enemy's main gun areas and headquarters.

As the attack went on, a standing barrage was put down about three hundred yards west of the river and, after crossing, the attack went on under a barrage during the night.

H-hour was selected to give enough light to the infantry to tackle the river obstacle, and subsequently, the maximum darkness for bridging operations and to enable a sufficient build-up of tanks and heavy weapons to be made west of the river before daybreak to meet the enemy's inevitable counterattacks.

The attack went very well. The 8th Indian Division attacked north of Lugo on a two-brigade front; the 2d New Zealand Division attacked across the big bend of the river west of Cotignola, after which the division had to make a big wheel to the left. In this way Lugo was pinched out and each division would drive on the following day to the Santerno. The 78th Division in between was to mop up Cotignola. The 2d New Zealand Division, the only division in complete possession of the near bank of the river, had extremely light casualties. The left brigade of the 8th Indian Division had very hard fighting. Along this division's front both banks of the river had to be crossed as one operation.

The first objective, the Canale del Lugo was captured, but on the right, the Germans fought very hard at the Tratturo stream and held up the 8th Indian Division there during most of the day (10 April). On the left, the 2d New Zealand Division advanced about 1330, and by nightfall had reached the Santerno—a very fine advance in twenty-four hours.

On the left, the II Polish Corps which started farther back from the river, had greater difficulties in crossing to secure its first bridgehead at Solarolo. After the bombing on 10 April, the Polish attack gathered speed and reached the River

Santerno near Mordano by the evening of 11 April. The 8th Indian Division on the right reached the Santerno by daybreak 11 April.

The attacks to gain a bridgehead over the River Santerno started with the 2d New Zealand Division early on 11 April, and that night the 8th Indian Division also secured a small bridgehead over the river. During the night the 2d New Zealand Division cleared Massa Lombarda and the 78th Division, from reserve, passed one brigade through the 8th Indian Division during the afternoon of 12 April. This brigade, the 36th, pushed on during the night with tanks with great success in a northerly direction. A big bridgehead over the River Santerno was now in our hands and the first phase was over.

#### Forcing the Argenta Gap

Although the Buffaloes had failed in Lake Comacchio, I hoped they would operate better on the flooded ground south of the lake. After the capture of the wedge, tests proved encouraging and on 11 April, the 169th, The Queen's Brigade of the 56th Division, captured Menate in a very successful operation. The Germans were undoubtedly surprised by this advance of some six miles. One battalion, loaded in Buffaloes, passed right across the flooded ground during the night, and a Commando protected the right flank by moving on foot along the southern shore of the lake.

Meanwhile the enemy was falling back steadily in front of the Cremona Gruppo (Italian) south of the River Reno where he was now in a big salient.

We were now closing in on the vital Bastia bridge. On the night 13-14 April, the 56th Division carried out a second right hook over the flooded country with the object of outflanking the Argenta gap and securing a bridgehead over the Marina Canal in the area Chiesa Del Bando. The Germans had rushed down

the first regiment of the 29th Panzer Grenadier Division from north of the Po. Some of the outflanking troops suffered considerably south of the Marina Canal. Bastia was finally captured on 16 April, and during the day the enemy withdrew to Argenta.

The 78th Division and the Queen's Brigade of the 56th Division made steady progress fighting their way through the Argenta defile, keeping east of Route 16. The decisive date was 18 April, when the village of Argenta was by-passed. That afternoon, the Commander of the 78th Division launched an exploitation force. By pushing on by night as well as by day, on three separate occasions an advance of several miles was made, some bridges were captured intact and many guns and prisoners taken.

The 6th Armored Division, which had been in Army reserve, was, on 18 April, placed under command of V Corps, and now began to move forward from Bagnacavallo. The day was a disastrous one for the German armies in North Italy, and their position already appeared hopeless. The 2d New Zealand Division had reached the Idice, and the Fifth Army was approaching Route 9 west of Bologna.

#### Fifth Army Attack

The main Fifth Army attack flared up from west to east, at 0930 14 April astride Route 64, and on the evening of 15 April astride Route 65. Both attacks were preceded by terrific air bombing of the valleys through which these two main routes ran. In these valleys the enemy had the bulk of his guns, local reserves and transport.

In his old mountain positions astride Route 65, the enemy put up two or three days of bitter resistance. By the 18th his position was hopeless, with the Eighth Army already on the Idice. East of Route 64, the 6th South African Armored Division, and west of Route 64, the 10th Mountain Division, from the first made excel-

lent progress. The advance of the 10th Mountain Division became decisive, and, after fighting its way into the plains northwest of Bologna, this splendid division led the advance of the Fifth Army due northwards to the River Po. This division, composed of selected volunteers, was, I think, the only mountain division in the United States Army. It had had to wait a long time for its first big battle, but now nothing could stop it.

#### Advance from the Massa Lombarda Bridgehead

Supported by some eight field regiments and two medium regiments, with continuous support from fighter-bombers during daylight, the New Zealand Division pressed on both by night and day.

The V Corps could now clearly concentrate on forcing the Argenta gap, so on 14 April XIII Corps followed by the strong 10th Indian Division, was brought around to take over the 2d New Zealand Division and the advance on the Budrio axis.

The old XIII Corps front could now be held more lightly and was taken over by Italian troops, and some British units were left to hold Monte Grande, to which General Clark still attached great importance, as the American attack was only just starting.

On 14 April, the 2d New Zealand Division reached the River Sillaro. On the night 15-16 April the division attacked across the river, and by the evening of the 16th was four miles beyond. The next hard fight was on quite a small stream, the Gaiana, where the enemy apparently decided he must stand as long as he hoped to hold the hills in the Monte Grande area. The New Zealand Division attacked on the night of the 18th and made a rapid advance to Budrio. That night, orders were issued for an attack across the Idice. It was found that on 20 April, the enemy had pulled out and was not holding his strong defenses on the river. On the 20th,

the 10th Mountain Division reached Route 9 northwest of Bologna, and that night the Germans pulled out of Bologna itself. The city was entered at dawn on the 21st almost simultaneously by Polish, Italian and American troops. With the capture of Bologna, the II Polish Corps had completed its task, and X Corps which had been following up the enemy in the hills south of Route 9, also came into reserve.

From its bridgehead over the River Santerno at Mordano, the II Polish Corps carried out a magnificent advance on the left of the 2d New Zealand Division, parallel to and north of Route 9.

It is interesting that throughout the battle the II Polish Corps was fighting some of the best German troops in Italy, first the 26th Armored Division, and then the 4th Parachute Division, and finally the 1st Parachute Division, as these divisions side-slipped northwards in their withdrawal out of the big salient in the hills and in their constant endeavors to block holes which were occurring farther north.

#### **Destruction of the German Armies South of the Po**

There is no doubt that about 19 April the Germans decided to withdraw over the Po; it was vital to the enemy to hold up V Corps to keep open their escape routes. Everything depended upon how quickly the 6th Armored Division could now get going. During the 20th the leading troops reached the Cembaline Canal, having turned the Po Morto at Traghetto. On the 21st the decisive successes began. The 17/21st Lancers that afternoon forced their way, covered by a smoke screen, through a narrow gap at Segni between the Cembaline Canal and the Reno. Poggio Renatico was reached by dark—an advance of eight miles. The rapid advance of the 6th Armored Division was kept up. The Lothians reached Bondeno on 22 April, and early on the 23d, the Derby Yeomanry of the 6th Armored Division reached the Po northwest of Ferrara, and the 5th Royal

West Kents of the 8th Indian Division, which had come up on the right of the 6th Armored Division, also reached the Po within ten minutes of each other. The 165th Lancers this day reached Finale and linked up with the right division of the Fifth Army advancing from the south. The advance of the 6th Armored Division had cut off a large number of the enemy, no less than seven thousand prisoners being turned back from the Finale area into the cages of the 88th US Division.

Meanwhile the leading troops of the 10th US Mountain Division had reached the Po, near Ostiglia during the night 22 April, so they had beaten us to the Po by a few hours. The German I Parachute Corps tried to get back across the river north and west of Ferrara, while the LXXVI Panzer Corps was crowding to the Po northeast of Ferrara.

By dawn on the 25th, however, we reached the river along the whole front from Polesella to the east. The crowning disaster for the enemy came on the night of the 23d when his last three ponton bridges were destroyed by the Desert Air Force. At every approach to the river, hundreds of vehicles were destroyed or burned out by air attack or artillery shelling. The enemy lost nearly all his self-propelled guns and tanks and field artillery south of the river; he had delayed his withdrawal until too late. In the early morning of 25 April, the Commander of the LXXVI Panzer Corps motored in to surrender to the 27th Lancers with the personnel of his small tactical headquarters. By the evening of 25 April, the Germans had lost some 50,000 prisoners of war to the Allies; nearly 14,000 of these were taken by V Corps. One must remember that these were nearly all front line troops; it was really only the "tail" that was left north of the river.

The first Allied troops to cross the Po were troops of the US 10th Mountain

Division who crossed about midday 24 April. For twenty-four hours there was hard fighting in a small bridgehead. Then the enemy broke, and, by the evening of 25 April, the 10th Mountain Division was approaching the outskirts of Verona, thereby cutting off the whole of the enemy's troops west of Lake Garda.

#### Crossing of the Po and the Final Phase

On the Eighth Army front the crossing was practically unopposed. For the crossing of the Po, DD (amphibious) tanks were used for the first time. The 7th Hus-sars took part in all three crossings. The Adige was reached within forty-eight hours and was crossed by light mobile forces almost at once, using DUKWS, Buf-faloes and DD tanks.

Meanwhile floating bridges were already across the River Po. North of the Po many bridges were captured intact, but frequently a bridge went up as our lead-ing troops arrived, and there were tre-mendous problems for the engineers to keep the pursuit going. The high-level, Class-40 Bailey bridge across the River Po was completed on 4 May at Pontelaos-curo north of Ferrara.

North of the Adige the pursuit became a race between the troops of the V and XIII Corps for Venice. The New Zealand Division took the surrender of several thousand German troops in Trieste on 2 May. These forces were still fighting in the city with Yugoslav troops when the New Zealanders arrived. The same day

the unconditional surrender of all the Axis forces in Italy was announced.

#### Chief Lessons

The outstanding feature of the final offensive was the magnificent fighting spirit, endurance and gallantry shown by our Empire soldiers in this final phase of the war. The battle had gone according to plan and the German Tenth Army was literally destroyed south of the River Po. The enemy had insufficient fighting troops with which to man his short "Venetian" line north of the Po.

For the Eighth Army the battle had meant twelve days heavy fighting between 9 and 20 April. A very large amount of ammunition was fired during this period, and in the last few days before reaching the Po, supplies of medium artillery am-munition had been given very great anxiety. The offensive had been planned, however, on the basis that the enemy could not stand more than three weeks in-tensive operations. The Desert Air Force gave the Eighth Army magnificent sup-port. They frequently located and knocked out single tanks or self-propelled guns. In the difficult terrain of Italy, this brought out once again that success was always achieved by good team work; good team work between the fighter-bomber, the tank, the Crocodile, the artillery, the infantry-man and the sapper. It was essential to have mutual confidence between the vari-ous arms, and this was always achieved when the various arms knew each other well and had trained together beforehand.

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He who denies the possibility of the infantry's achieving success would better lay aside the military uniform, for he is like the man who hypocritically professes religious ideas without being, in his heart, convinced of their truth.

*A Defesa Nacional (Brazil)*

## French Adaptation to Future War

Translated and digested by the MILITARY REVIEW from an article by General de Lattre de Tassigny in "Revue de Défense Nationale" (France) April 1947.

### Variables and Constants

THE amazing material progress of the last few years is leading to a revolution in warfare and its general nature can even now be discerned.

Both in hypotheses about the future and in deductions based on past experience, it is necessary that our conclusions possess the same probable values:—some depend closely on the value and extension of new inventions, while others, having to do with the phenomenon of war taken as a whole or the human reactions occasioned by it, are largely independent of the technical characteristics or weapons and methods of combat.

The first, depending closely on war matériel, are essentially variables; the second represents constants which, if not absolutely unchanging, are at least very slow in evolution.

In the face of the formidable unknowns connected with new inventions, it is difficult to develop a reliable military architecture if we do not base it on these constants. An analysis of them is, therefore, indispensable in any attempt to adapt our military organization to the war of tomorrow.

### First Constant: Total War

The fundamental fact of World War II was its total character.

This phenomenon, which made its appearance with the birth of the great national wars, experienced a further expansion with the advent of the war of matériel. The introduction of the machine into armies brings with it the necessity for so great a productive effort that all the elements of power of a nation, its people, its science and its industries, must be mobilized for war.

But war has not become total only

through the cooperation of all persons. It has acquired this character also through the extension of the dangers of war to the entire surface of the belligerent countries. Yesterday, it was motorization and the airplane, tomorrow it will be propelled projectiles and airborne forces which will extend the radius of action to the most distant points. Hence, every inhabitant becomes a possible victim and every able-bodied man a potential combatant.

General participation in war effort, general participation in war danger, possible participation of all in either regular or underground fighting—these are the three principle features which give modern war its total character.

As a result, the central idea in any modern concept of the defensive mobilization of a country will be total mobilization, the new formula for general mobilization.

Of this total mobilization, military mobilization constitutes only a part. It no longer suffices to limit mobilization only to those things which play a role in battle. In modern war, every national force must be stirred to life and mobilized. Total mobilization is impossible, therefore, without a transformation of all activities with a view to war. This presupposes adequate organization of governmental machinery. In fact it is less a matter of preparation worked out by a special ministry than organization of the structure of government in accordance with the exigencies of total war and the requirements for its preparation. A transformation in this direction was noticeable in all the warring nations during the last conflict, regardless of whether they were totalitarian or democratic. If this adaptation was not observed in

France, it was because her home territory was occupied in the first phase of the conflict.

Total mobilization may be subdivided as follows:

1. Mobilization of the fighting spirit of the country and the attack of enemy morale. This "psychological warfare" is required of the government as a whole and its intelligence agencies.

2. Mobilization of production and attack of enemy production. This is "economic warfare." Such mobilization aims not only at the production necessary for armed forces but also the rationing of consumption and the control of civil production in order to free the maximum number of men for combat.

3. Mobilization of foreign friendships. This may be termed "diplomatic warfare." The task here is to direct diplomatic action in accordance with economic and strategic realities, with the security of the country as its aim.

4. The proper military mobilization for the armed conflict necessitates the conscription of the entire nation. It comprises today, on the one hand, the mobilization of armies for bearing arms, and, on the other hand, the organization of the entire population for combat or resistance in case of invasion. This "expanded military mobilization, one of the clearest lessons from the last conflict, aims not only at the creation of a "national army," but of an "armed nation."

In a modern nation it seems indispensable that the government should be permanently organized to insure the operation of the four functions we have just analyzed.

In the execution, preparation and conduct of total war, the majority (if not all) of the ministerial departments, are involved. The French law of 11 July 1938, organized the preparation for total war, charging each ministerial department with the mobilization of resources correspond-

ing to its particular activity. But this law, today, seems very antiquated, for it deals mainly with measures of passive defense and industrial mobilization, and draws the line too clearly between civil requisitions and military mobilization.

A new law should consider not only times of war but also times of peace. The events of the last few years have proved that we may pass from a state of peace to a state of war in a very gradual manner, or, on the other hand, through a brutal surprise attack, as at Pearl Harbor. A state of peace has sometimes been accompanied by very grave dangers to a nation.

This problem, whose solution depends on the nation in its entirety, is mainly political. Hence we cannot, as military technicians, do more than stress the importance of the questions involved in the organizations of total war from the point of view of the army, and attentively follow the solutions decided upon.

A second consequence of total war is the change in the concept of military service, broadened to mean "national service."

During the entire duration of his or her active existence, every man or woman has potential war duties in production, administration, or the army, and the resulting obligations must be equally imperative for all. The application of this principle would constitute national service.

Since it is necessary to divide man power between the armed forces and production, we must achieve a just balance between the necessities of the military and the general needs of the country in times of war and peace. It is also of advantage to find, for each individual or group, the employment in which their efforts will be most effective in time of war.

We are thus faced with the necessity of working out for time of war, a "plan" for the nation, providing in advance for the war needs of the country as a whole



and apportioning to each sector the means that are indispensable to it. Preparation for war likewise obliges us to establish a plan for times of peace. Not only must we meet permanently the needs of our national economy but also we must assign to the various military sectors the human, financial and production resources for the permanent missions of the armed forces, for the military training of the country, and for the materials necessary for war.

We may deduce from the idea of total mobilization that a considerable proportion of the population will be attached during war to civil, production, or administrative duties. These "civil reservists" would participate in the armed struggle only for the local defense of the territory in case of invasion. Their military qualification is not the same as that of the reservists of the armed forces. Their military training could, therefore, be shorter, but new obligations of a civil order should be imposed on them.

It is, doubtless, too early to judge the reception the country will accord these new concepts. The form of the civil obligations in time of peace will be hard to work out, and owing to the diversity of military obligations, serious objections of a political nature may be encountered. But it is none the less true that national service, a delicate problem in time of peace, perhaps would be obligatory in time of war as one of the bases of total mobilization. In this form, moreover, it would but serve to systematize certain methods already in use during the last two wars.

Thus, the total form assumed by modern war is capable of producing profound repercussions on our institutions. This was realized by our legislature in 1946 when it introduced in the constitution of the French Republic the concept of the "es-

tablishment of community of resources" and "coordination of measures for national defense." These general notions, which properly belong to the category of constitutional principles, must now be interpreted by appropriate legislation and an adaptation of the structure of government and administrative agencies.

Without the creation of this structure, nothing of worth can be undertaken militarily. Conscious of this fact, the army feels itself incapable, by itself, of solving the problems on which it is closely dependent for its strength. Far from desiring, under cover of national defense, to control the totality of the nation's activities, it wishes ardently that the entire nation adapt itself resolutely to the new formula which, alone, can guarantee its security.

#### Second Constant: Territory

Recent inventions possess a number of characteristics in common:

(a) First, nearly all of them travel through the air.

(b) Secondly, all of these inventions lead to an enormous augmentation of fire power—"fire" being taken in its broadest sense. Nuclear energy multiplies to unheard-of proportions the effects of the best explosives.

(c) Lastly, the incessant progress that is being made in the fields of jet-propulsion and remote control have now opened an enormous field of activity on a continental or even planetary scale.

These factors point to increases in mobility, range and firepower, and a preponderance of the threat from the air.

Therefore, whatever be the form of the military operations, it may be assumed as certain that they will affect not only the home country but the whole of French territories as well.

Placing a nation in a state of defense over its entire surface leads to the necessity of establishing a powerful stra-

tegic reserve capable of intervening in force wherever the enemy strikes.

This modern battle force, a rejuvenated form of the traditional army, should be endowed with great mobility. It should be entirely motorized and, very likely, capable of being transported by air in order to be able to move in minimum time from one theater of operation to the other. It will, therefore, have to combine lightness and power.

This analysis shows that the battle force of tomorrow is too dependent on technical variables for us to be able to place any dependence on the solutions that suggest themselves at present.

However the new concept of territorial defense can even now provide conclusions that are immediately applicable.

Indeed, it would seem that this defense should comprise the following two categories:

(a) Organization of a powerful force, charged with the mission of aerial interception over the whole of the territory, and capable of discovering and destroying enemy weapons in the air and of alerting promptly the defense forces and populations.

(b) Organization of the local defense of vital points, that is to say, not only of the positions, zones, installations and depots that are of importance from the strategic point of view, but also all the organizations which possess value from the political or production points of view.

This analysis already permits drawing a certain number of conclusions that are unquestionably of future worth:

(a) First, the whole of the territory of the French Union must be divided into theaters of operation, strategic zones and defense sectors, bases of operation and vulnerable zones. This division may even now be deduced by the aid of a stra-

tegic and economic study of the territories of the French Union.

Such vast theaters of operation must be subdivided for the exercise of combined command. We arrive, thus, at the concept of strategic regions or zones in which the territorial defense and the three major categories of armed forces are joined under a single command, but the conduct of air operations and the command of the strategic reserves are centralized in the theater of operations echelon.

Lastly, the defense sectors belonging to the frontiers, the coasts or the interior, would comprise only the territorial defense reinforced, if necessary, by battle force elements.

(b) There must be organized a substructure of command agencies, signal communication organizations, installations and depots of different kinds that will go to make up the framework of the various categories of the national defense.

This substructure must be permanent as far as its principal elements are concerned, for we cannot wait for the outbreak of a war to install our command posts, our intelligence and signal service centers, or our repair and maintenance agencies. The protection of these vital installations must be insured in time of peace by the construction, or adaptation, of passive shelters and fortifications of a new type.

(c) Lastly, the raising of the territorial forces must be anticipated. Here is an entirely new domain. It seems that these territorial forces ought to be made up of locally mobilized units. These would be organized to provide sufficient forces for protection of vulnerable zones and the functioning of air, coastal and land defense without disorganizing production. In case of danger, these would be reinforced by alerting the population, part of which would continue to work while, in case of attack, all reservists would join in defense.

### Third Constant: The Human Individual

The problems created by the conception, realization, and employment of a modern battle force, calls for modifications in our thinking and in our methods of training.

With scientific progress continually changing, human intelligence must also change. Dynamic human qualities of imagination and curiosity, initiative and willingness to assume responsibility, together with alertness and flexibility, are required.

The army must become the center of a broad and free flow of ideas based on rational foresight, scientific research and a knowledge of foreign ideas and accomplishments.

In training and instruction, methods based on memory must give way to those based on initiative. That is why, at the present time, the army is conducting troop training and instruction to develop adaptability in the soldier. "Shock" methods of instruction give the trainees the highest measure of individual and collective power, and render them capable of standing up under the strain of modern battle or *maquis* fighting.

Development of initiative and willingness to take responsibility from the lowest grades up requires a more intensive development of character. All ranks must be imbued with the importance of the hu-

man factor in the command of units, and must possess a proved practical sense. An indispensable complement of this development is a rigorous and loyal intellectual discipline.

The development of dynamic qualities appears to be the best preparation for the uncertain role of the soldier in any future war. The human individual will continue to be the basic "weapon."

### Conclusion

1. From the concept of total war, we see the necessity for adapting governmental agencies and legislation to total mobilization.

2. The concept of "area" defense permits, even now, the construction of a general framework of territorial defense.

3. These two concepts give rise to a new interpretation of the duty of the citizen in future warfare, the creation of a national service, the expansion of our former mobilization, and, perhaps, military service in time of peace.

4. The necessity of adapting to technical advancements leads to stimulation of intellectual activity in the army, based on a powerful organization of scientific research and intelligence.

5. In training and instruction, we see the necessity for emphasizing dynamic human characteristics and developing in soldiers the capacity to adapt to the unknown situations of the future.

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**Men do not think in battle. All they do is act as they have been trained. An officer who leads men into battle without adequate training is practically a murderer.**

*Revista Militar* (Bolivia)

## Corps Artillery

Translated and digested by the **MILITARY REVIEW** from an article by Major Felipe de la Plaza in "Ejército" (Spain) February 1947.

THE weapons of large units such as infantry, cavalry, and tanks, do not alone produce enough fire power for success in battle. This is the first reason for the existence of artillery, which gives the other arms the necessary fire power. The second reason is the need for hindering the enemy from participation in battle and modifying such participation to suit our own purpose.

All the artillery participating in a battle constitutes an interdependent team. For this reason, the artillery of the large units (divisions and corps) should be organized according to the needs of the units served.

In order to justify its existence, corps artillery must support the division in combat and protect its command and observation posts from enemy action. The missions of the corps artillery, therefore, can be grouped into two main headings: general artillery support (of the divisional artillery), and counterbattery. The logical organization of this artillery, therefore, will be one that facilitates the fulfillment of its missions.

In the present peacetime organization, the corps artillery regiment normally consists of four groups or battalions. One group consists of 149- or 155-mm howitzers of different ranges, another of 122-mm or similar guns; a third of 88- or 76-mm antiaircraft guns. The fourth is the reconnaissance group. The command of these groups of different characteristics, employment, range, and technique by one colonel is extremely difficult. Antiaircraft defense, the responsibility of a single specialized group, is most limited and ineffective for the normal zone of action of a corps.

The reconnaissance group works almost

exclusively for the groups charged with counterbattery fire. Only the group having 122-mm guns is adequate for counterbattery. To this must be added the general lack of sufficient personnel and equipment for the staff.

If corps artillery is to fulfill the general mission of protecting the division in combat while the divisional artillery is called upon to support the attack of the infantry regiments, it is necessary that the corps artillery prevent the enemy from participating in the battle. This may be achieved by neutralizing the enemy artillery that prevents the divisional artillery from fulfilling its mission; by preventing the advance of enemy reserves and tanks; by harassing the reserves and their commands; and by neutralizing enemy observation posts interfering with his communications and lowering his morale by fire.

Another mission which at present is as important as the two missions mentioned is antiaircraft protection of two important zones—the areas where the division and corps artillery emplacements, command posts and reserves are located.

From this we can deduce the organization of the corps artillery. The guns of greater range and fire power are required for counterbattery missions, with emplacements back near the reconnaissance group or its information center, where it may be protected by nearby antiaircraft weapons. In the same manner, the guns of lesser range and fire power in the divisional artillery will take up position near the division in order to facilitate liaison and support. These guns, also, must be well protected by antiaircraft.

To obtain a clearer idea of the organization of the corps artillery it is nec-

essary to examine more closely the completely different techniques of the two kinds of artillery that fulfill its two missions.

The guns assigned to counterbattery missions are generally located between eleven and twenty kilometers, and often open fire with precision and surprise. This requires a thorough survey of all information pertaining to ballistics, meteorology, etc. The correction of this information, obtained through aviation, visual and sound locating batteries, the reconnaissance group and other sources, includes the location of the objective and its coordinates, as well as any possible movements of batteries, reserves, tanks, etc.

Guns of the divisional artillery supporting the infantry act in a very different way. They follow the battle in all its phases, overcoming any difficulty or deficiency in pointing out objectives or in maintaining the flow of communications. They engage the target rapidly, with a hasty survey, and correct their fire with ground observation, and advanced observation posts. These guns generally do not need the aid of the reconnaissance group

or aviation, but they do need antiaircraft protection.

Both kinds of artillery, as well as the corps artillery assigned to counterbattery and general support missions, should have an organization that can absorb other units and groups, which might be attached from the general reserve for offensive action.

From the above, we get an idea of what the organization of the corps artillery should be. It could be two regiments, whose general missions and technical designation would be counterbattery and general support.

A more detailed organization would be:  
*For the Counterbattery Regiment:*

1 group of howitzers, caliber 149/30 or 149/24.

1 group of guns, caliber 122/46.

1 group of antiaircraft guns, caliber 88/56.

1 reconnaissance group.

*For the General Support Regiment:*

1 group of howitzers, caliber 155/13.

1 group of guns, caliber 105/28 or 105/30.

1 group of antiaircraft guns, caliber 88/56 or 75/36.

2 regimental headquarters.

## Soviet Military Discipline

Translated and digested by the MILITARY REVIEW from an article in "Ny Militär Tidskrift" (Sweden) No. 4, 1947.

IN 1946, new regulations for interior service and for discipline in the Soviet Army were issued. In both, the importance of strict military discipline is stressed and a number of measures for increasing discipline in the Army are recommended.

The periodical, *Voennii Vestnik*, bases an article on the regulations for interior service on Stalin's order of the day of 23 February, 1946: "Progress in troop training and education are unthinkable

without strict military discipline and order, the maintenance of which is the foremost duty of army personnel." The article stresses that the regulations are the result of many years experience on the part of military organizations and that, in addition, they show the possibilities for further augmenting discipline and interior order among the troops. Much is required for both superiors and subordinates. The subordinate must unhesitat-

ingly obey his superior. The superior's command is law to the subordinate. "Soldiers," state the regulations, "are to salute superiors and seniors and comply strictly with the military regulations relative to military courtesy and respect." The article considers these requirements very important. One of the most important marks of respect for superiors and seniors is the salute. The regulations state: "All soldiers must salute one another. The subordinate and junior salute first." In contrast with the 1937 regulations for interior service, according to which signs of respect for and announcement of the presence of a superior occur only on the occasion of the latter's first appearance at an exercise, the new regulations require this at every appearance of the superior at the exercise. The rules of military courtesy forbid soldiers to sit or smoke in the presence of a superior or senior without the latter's permission. In public places as well as in street cars, buses, subway cars, etc., soldiers are to salute a superior or senior who enters and, if all seats are taken, offer him their own. All of the provisions of the regulations are aimed at reinforcement of the superior's authority and power. In conclusion, it is contended that the regulations are the expression of Stalin's concern for the Soviet soldier and the armed

forces. It is incumbent on the officers' corps and party organizations to attentively study the regulations and conscientiously comply with every requirement, thereby raising troop discipline.

According to the disciplinary regulations, "ordinary reason" requires military discipline of every fighting man, punctilious obedience to military regulations and the commands of officers, respect for officers and superiors, and careful observance of the instructions on military courtesy and respect. It is further prescribed that every commander shall resolutely see that the requirements of military discipline are fulfilled; he must educate his men in unflinching obedience, and instill in them a desire to fulfill their duty and show respect. The commander's orders are law to those under him. His orders shall be punctiliously carried out at the designated time and without dispute. Different disciplinary punishment is meted out, on the one hand, to the soldiers and non-commissioned officers, and, on the other hand, to officers. One of the chapters deals with problems of the "officers' honor courts." "Honor courts are instituted for the purpose of protecting the Army's honor and the dignity of the officer's profession. In them are decided questions relative to conduct unbecoming an officer or prejudicial to the Army's honor or its morale."

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If my honorable friend had an opportunity during the war of visiting Moscow he would find the smartest saluting in the world. The importance attached to these minor acts of ceremony builds up armies which are capable of facing the greatest rigors of war.

*Winston Churchill*

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## Polish Armored Cavalry in Germany

Translated and digested by the MILITARY REVIEW from an article by Major T. A. Wysocki in "Bellona" (Publication of Polish General Staff, London), July 1946.

AFTER a five-month period of static operations on the Meuse in Holland, the Polish 1st Armored Division crossed into Germany and began operations in the direction of the Frisian Peninsula. The 10th Brigade of Armored Cavalry, a part of this division, covered 240 kilometers in a forced march on the 8th and 9th of April. The Rhine was crossed on a ponton bridge midway between Arnhem and the Ruhr basin. After the crossing, the Division moved northward along the German-Dutch frontier, going into action in the flat, marshy terrain north of the main highway connecting Arnhem, Linen and Bremen.

On the 10th, the Division made contact with the enemy, between the Canadian 2d Division on the left and the Canadian 4th Armored Division on the right. The 10th Brigade of Armored Cavalry, passing through Enter, Rijssen and Almelo, reached the concentration area north of Balderhaar.

The composition of the brigade was as follows: 1st Armored Regiment; 24th Regiment of Uhlans (an armored regiment); the 9th Infantry Battalion; the 1st Battalion of the 1st Regiment of Antiaircraft Artillery; 10th Light Medical Company (less three detachments), and an armored repair detachment.

The brigade was operating without the 10th Regiment of Dragoons, which was already in action under the division as a detached unit and likewise without the 2d Armored Regiment which was operating with the 3d Rifle Brigade.

On 10 April, the brigade received its mission to cross the river Ems on 12 April and go into action in the direction of Papenburg and Leer. The mission of forcing the river fell to the 9th Rifle Battalion. Enemy resistance proved so

weak that this formation easily fulfilled its mission with but a part of its forces. On 13 April, the 10th Company of Engineers constructed a bridge at Haren. The following day the brigade crossed the river without combat and continued northward on the highway along the river.

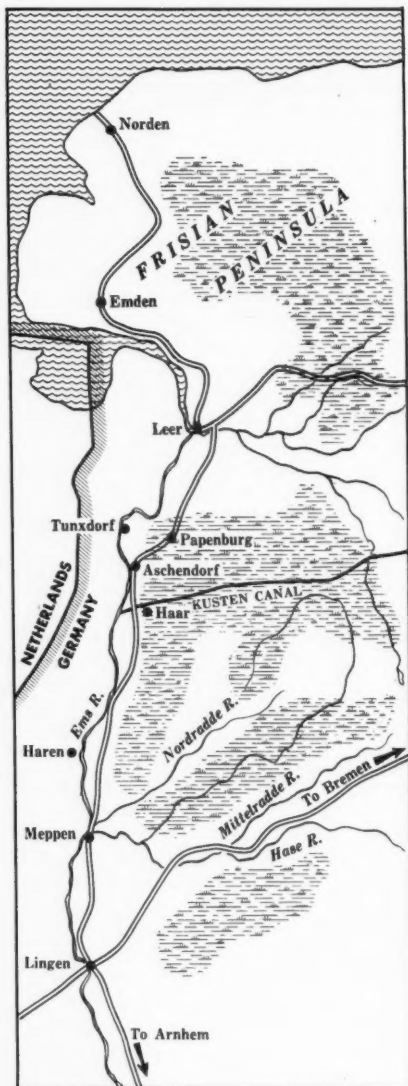
### Forcing the Küsten Canal

The bridge across the Küsten Canal on the highway leading to Papenburg had been destroyed. It became obvious that the enemy was consolidating his positions on the northern bank over the whole of the brigade's zone of action. All attempts at crossing by reconnaissance patrols were decisively repulsed by enemy fire.

The brigade halted in the concentration area on both sides of the highway, north of Becklusen, and remained there till 20 April.

The brigade had now reached a barrier which blocked entrance to the Frisian Peninsula and two important sea bases, Emden and Wilhelmshaven. This barrier included the Küsten Canal and the belt of marshy terrain and peat-bogs lying on the north and south sides of it.

The brigade commander decided to conduct the attack along the highway. The zone of attack was bounded on the east by an unnamed canal running in a north-south direction, and on the west by the Ems river, which flowed along the border of the zone. The width of the sector was three kilometers, increasing gradually until it attained four kilometers at a point opposite the city of Aschendorf. The water obstacle, at the point of crossing was twenty-five to thirty meters wide. The terrain in the immediate vicinity of the highway and the railroad was suitable for use by tanks, but some roads proved to be too soft, in many places, for Sherman tanks.



The enemy detachments fighting against the brigade were composed of various elements hurriedly combined into combat groups. They showed a decided resistance, although they were not properly equipped with weapons. They effectively demolished roads and bridges, using air bombs buried in the ground. A 500-pound bomb produced a crater fifteen meters wide which soon filled with water. This proved to be an obstacle which could not be avoided, owing to the marshy terrain.

The brigade was opposed by the "Gericke" combat group, operating in conjunction with the 7th Parachute Division. Numerically, this group corresponded to one, weak regiment (of three battalions), but it was extremely valiant and stubborn in defense. There had been a scarcity of information concerning the enemy because the terrain in the direction of the brigade's attack was a natural fortress, surrounded by water, which had not yielded a single prisoner.

Fighting was still going on on the west side of the river, and on the day the brigade arrived in the concentration area, enemy elements were still to be found south of the brigade's point of debarkation.

On 14 April at 1630, a rifle battalion attempted to cross the canal, but failed. The brigade commander decided to repeat the attempt during the night 14-15 April, but this also failed.

During the next few days the brigade was reinforced, and on 18 April, the day before the attack was to be renewed, it was composed of the following: 1st Armored Regiment; 24th Regiment of Uhlans; 1st Tatra Rifle Battalion; 9th Rifle Battalion; 4.2-inch Mortar Platoon; 10th Company of Engineers; one platoon of the 11th Company of Engineers; 10th Medical Company; Advanced Repair Detachment from the repair company of the Armored Brigade; one squadron of "Crocodile" flame throwers (British); mortar combat section.

In direct support was the 1st Regiment of Motorized Artillery, and in addition, air support adequate to insure air superiority at the time of crossing and the following day.

The mission remained unchanged; the crossing of the Küsten Canal and the taking of Papenburg.

The main plan of operation included three phases:

1. The crossing, executed by the rifle battalion.
2. An attack by one armored regiment to seize an assembly area for the general attack.
3. An attack by two armored regiments, operating alongside each other.

The fire preparation, air bombing, crossing and seizure of the bridgehead took place exactly according to plan, and almost without losses. The effect of the fire from the flame throwers, the artillery and aviation, was so great that the enemy was positively paralyzed, and at the time of crossing offered practically no resistance.

The crossing began at 1030, and by 1315 the bridge was ready and the armored squadron crossed over. The construction of this bridge represented an unusual accomplishment since in fifty-five minutes time a fifty-foot bridge with a capacity of forty tons was built under fire. The enemy twice attempted counterattacks with infantry which were repulsed. In another unsuccessful counterattack, the resistance of the enemy was completely broken and a total of 380 prisoners, including the commander of the battalion, were taken.

Our own losses were seven killed and fourteen wounded.

The 1st Armored Regiment set out at 1600, crossed the bridgehead and engaged the enemy. The antitank guns were brought into action and the attack of this regiment became a slow methodical fire-fight as the enemy moved on to the north. Dur-

ing the night the engineers constructed a crossing of the Dever.

#### Battle for Aschendorf

The 1st Armored Regiment resumed the attack on 20 April and at midday headed in the direction of Aschendorf. The terrain was suitable for tanks, and squadrons were able to deploy. Movement was not easy, however, owing to increased antitank defense. The fighting became a typical tank battle, with the adversary well equipped with antitank guns and artillery which were delivering an incessant and fairly dense fire from somewhere in the area northeast of Aschendorf. The air force, however, eliminated the artillery.

The "Konstanty" formation (24th Uhlan Regiment with other detachments), operating alongside the 1st Armored Regiment, encountered only weak resistance, but bad terrain slowed the rate of advance. The boggy roads gave way under the weight of the tanks. The columns were broken up, and two or three enemy antitank guns completely paralyzed movement. About noon, however, the canal was reached and two crossings suitable for use by tanks were seized.

Meanwhile, the action of the left wing was developing very well. At 1130 the attack on Aschendorf began, and at 1330 the 1st Armored Regiment reached a point even with the city. About this time, the "Konstanty" group arrived and engaged the enemy on the highway. This action cancelled the plans of the enemy to withdraw to the northeast under the protection of his antitank guns. The "Konstanty" group advanced, reached the Aschendorf-Papenburg highway and seized the undamaged crossing over the canal, almost within the suburbs of Papenburg.

This action sealed the fate of Papenburg which the enemy was now unable to defend, and the following day he surrendered the city almost without fighting.

The 1st Armored Regiment continued

the battle of Aschendorf under difficult conditions. The city was on fire, and the enemy's routes of retreat having been cut, he now defended himself in the buildings. But resistance was gradually liquidated, and the regiment moved on to the final phase of action assigned for that day, the capture of the Tunxdorf woods in the bend of the Ems river northwest of Aschendorf. This action aimed at securing the left flank of the brigade for action against Papenburg the following day.

By evening of 20 April, it was plain that the brigade had completed its mission. The Küsten canal, as an obstacle, had lost its value over its entire length and the forces fighting to the right of the brigade now needed only to construct a bridge and then cross over for further action in the Frisian Peninsula.

The entire operation, including the crossing of the canal and the capture of Aschendorf, was carried out in accordance with plans and with efficient cooperation between the armored brigade and supporting weapons.

Among the more important features of this action were the following:

1. Attempts at crossing by brute force did not succeed, but further preparation in the form of special reconnaissance and careful elaboration of the plan of operation gave positive results.

2. The artillery and air preparation lasted scarcely twenty minutes, but was so concentrated that the defenders were stunned and knocked out of the battle

for the time required to cross the canal and establish the bridgehead.

3. The air force played a very important role. The bombings at the time of the fire preparation were executed with precision and extreme accuracy, very close to our own forces. The air effort on the first day was 145 sorties and on the following 70.

4. The "Crocodile" flame throwers rendered enormous service, both during the crossing and the tank attack. They were perfectly adapted for "smoking out" the enemy from his positions in buildings, and in shrub-covered terrain, also when dug-in or hidden in shelters.

5. The correctness of the principle of "fire terror," which our armored formations had adopted from experiences during the previous year, was confirmed. This consisted of fire from all armored vehicles, delivered on everything in the terrain that might be the hiding place of some enemy weapons, whether confirmed or only possible.

6. One group operated in bad terrain where advance was possible only over roads which could bear the weight of a tank in spite of hard surface. Thus, the enemy with demolitions was able to check the speed, shock and maneuverability of our tanks.

7. Placing a combat group under the command of the assistant commander creates certain staff difficulties. The commander of the formation must be given means of command. A staff must be created for him similar to the staff of the brigade.

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Due attention must be paid to these conditions, so that security does not interfere with reconnaissance, which of course is the duty of all troops in the first line... Furthermore, far reaching reconnaissance is the best means of providing security.

*Moltke's War Lessons*

## Was the Invasion Too Long Delayed?

Digested by the **MILITARY REVIEW** from an article by Cyril Falls in "The Illustrated London News" (Great Britain) 29 March 1947.

It is well known that the possibility of launching invasion of Germany through Western France in the year 1943 was debated by the British and United States authorities. From time to time there have been allegations in the American press and books that this could have been carried out successfully but for British opposition.

One of the recent discussions appears in an article in the *Saturday Evening Post*. The author, Martin Sommers, has at his disposal some information from military sources, but it is fair to say that that which he reveals is sketchy. He states that in 1942, the British agreed to a western invasion the following year. The American authorities concentrated on preparations, such as training troops, collecting shipping and landing-craft for this venture, while the Pacific war was to "progress at quarter to half-speed." Then Mr. Churchill changed his mind. Lord Mountbatten was sent to Washington and he was followed by Mr. Churchill, who arrived on 18 June 1942.

The British Prime Minister, according to this account, was perturbed over British relations with Australia, India and South Africa. He believed that the link with them could be strengthened by operations in the Mediterranean. He hoped that invasion on the "Belgrade-Warsaw axis" would secure British power in Europe after the war. Mr. Sommers described a conference at the White House, during which Mr. Churchill marshalled his arguments against western invasion in 1943. General Marshall then called upon Colonel Wedemeyer (later general) to reply. He demolished the Churchillian arguments. Eventually a compromise was reached, rather in Mr. Churchill's favor. Western invasion was to be deferred till 1944. There would be no campaign on the "Bel-

grade-Warsaw axis." But he gained the President's assent to invasion of Sicily and Italy in 1943. This was, says the narrator, a grave mistake. It not only delayed victory, and in the process sacrificed a great number of American lives; it also gave Russia that preponderant position after the war which has caused such vast expenditure of manpower and money.

This story is substantially founded upon fact. The United States authorities were averse to invasion of Italy, undertook it reluctantly, and afterwards considered that the expenditure of the Italian campaign was unjustified. A British writer, Lieutenant General Sir Giffard Martel, in a book entitled "The Russian Outlook," also criticizes this campaign and is inclined to think that the western invasion could have been launched in 1943, and certainly earlier than it was. Mr. Sommers admits that if Mr. Churchill's plan had been accepted as practicable and proved successful, Russia would not have "got the drop" on the United States. Lieutenant General Martel goes further and considers that as an isolated military offensive it would have been sounder than the cross-Channel invasion. But what would our views have been when the time approached to carry it out? We then knew a great deal about the "V" weapons. As Lieutenant General Martel remarks, we could hardly have concentrated on an advance from the south while leaving the Germans in Northern France and the Netherlands undisturbed to operate these weapons. With that I fully agree. But the main issue is whether the western invasion could have been launched a year earlier and would have ended the war a year earlier.

The first argument is that Allied

experience was insufficient. The landings in French North Africa had so many shortcomings in organization that they might well have failed altogether against a really hostile, determined and well-equipped defense. The airborne operation in the Sicilian invasion was a ghastly muddle. There were further errors in the invasion of Italy. Then there is the lack of trained troops. So far as I know, some of the American divisions which took part in the later stages of the campaign in North-west Europe were not organized by June 1943. Neither the British nor the United States then possessed highly-trained or equipped airborne divisions. There were hardly any landing-craft in the United Kingdom—and a grave shortage of timber to make them. It seems highly doubtful whether the United States could have furnished us with enough. I feel convinced that the British-American armies which carried out the invasion would have been an inferior fighting force to what they were in 1944. Air supremacy had not reached its maximum. Finally there was the Pacific war and its immense appeal to the American Republic. Mr. Sommers gives much of his case away when he admits that the naval authorities, skeptical about the 1943 invasion, had been quietly fighting the allocation of shipping to European waters. Such evidence as I possess points to the truth of this statement.

As regards the enemy, the fact that there were only twenty-nine divisions in the West in 1943, according to Mr. Sommers, as against double as many in 1944, does not appear to be of primary importance. The increase in the German forces was not due to the enemy finding himself in a better situation to afford them. The increase was due to the fact that the western invasion was known to be impending. If that had been apparent in 1943, and it could not have been concealed, the German High Command would have contrived to muster a comparable force to

resist the attack. Nor do I regard the increase in the strength of the "West Wall" in the last year before the invasion as particularly significant. It caused considerable anxiety and necessitated special measures, but it did not prove to be the main obstacle, which was the German field forces and especially the armored divisions.

German losses had been very heavy on the Eastern Front in the interval. It must also be borne in mind, however, that losses in Sicily and Italy had been appreciable, and that the strain of maintaining the campaign south of the Alps had been greater than could be deduced from any casualty list. I am not now counting the enemy's losses in Africa, since I assume that the campaign in that country would have taken place in any event.

There are two other important factors. If the campaign to knock Italy out of the war had not been pressed home, there would have been no Italian surrender. That dramatic event was followed by disappointment, but it brought in one large tangible asset, the Italian Fleet. A handful of bold and determined officers could have made that a considerable asset on the other side. Assuming that the Allies could have kept it penned up in the Mediterranean and prevented its major surface units from passing through the Straits of Gibraltar, it would none the less have caused a heavy strain upon their resources. The *Luftwaffe* would have continued to use Italian airfields. Italian forces could have served the enemy profitably in the Balkans, and might have been employed in France. Incidentally, when the end came, the Russians would have "got the drop" on the United States in Greece, where a Communist regime would have been set up. The other consideration is the bombing of Germany. I have never favored the bombing policy as it was carried out, either from the point of view of policy or military efficiency. On the other hand, I



have never denied that its effects were great. But if the bombing between June 1943 and June 1944 were eliminated, these effects would not have been nearly so important.

We must not forget, either, the almost irremediable effects of defeat in a great combined operation such as the landing in Normandy. If a Russian offensive failed, as happened more than once, it was a set back and no more. The front had to remain quiet for a period while fresh forces were brought up. If, on the other hand, the landing in Normandy had failed, it would have been a frightful disaster. Virtually all the equipment put ashore would have been lost. A great proportion of the landing-craft would have been destroyed. Whole formations of troops

would have been dislocated. The moral shock to the people of this country and of the United States would have been terrible in its force. Supposing that they had survived this blow, it is doubtful whether another invasion could have been mounted before autumn, after which it would have been impossible before the following spring. It would have been delayed for upwards of a year. Such being the nature of great combined operations, it is necessary to insure very heavily before they are undertaken. I do not consider that we were over-inspired by D-day 1944.

So far as my judgment goes, whatever other errors were made by the Allies, they made no mistake in postponing the invasion from the west until the year 1944.

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## Staff Work

Translated and digested by the **MILITARY REVIEW** from an article by Colonel Juan E. A. Vacca in "Revista Militar" (Argentina) March 1947.

MEN cannot be handled like inanimate objects. This primary concept of life and behavior, fortunately taken into account by our Army, is of wise application regardless of the size of the command, even in the highest levels of our troop units, territorial zones or the services.

Accordingly, every day of work and the strengthening of the military system fits into a pattern of close cooperation, because all contribute with their efforts to a common cause.

Such is the case with staff work. This work requires frequent conferences in arriving at the solution of various problems.

For example, in a given matter, an officers' meeting with the Commander and Chief of Staff is desirable. Frequently the meeting is with the latter only. The subject matter is announced, explained in detail, discussed and then referred to the pertinent staff section.

This practice tends to exercise the personal influence of the superior officer and do away with "red tape." It avoids the necessity of papers going from one office to another with consequent delays.

It also gets the command "on the ball" without conflicting with SOPs on staff work.

We not only save time, but we also promote competition among personnel, counteract the accumulation of papers, and emphasize the importance of the staff meeting.

A set hourly schedule is very convenient, but for professionals the best objective is a mission accomplished or completed ahead of schedule, without being bound, except in justified cases, to preestablished hours.

Intensive work deserves compensatory time for rest or study to allow for meditation about what was accomplished, fore-

sight into future tasks, and opportunity for creative thought.

Recreation to vary the office routine helps in the conscientious analysis of important matters.

The contagious excitement of rush work should be avoided. One should fix priori-

ties and do slowly and carefully that which is urgent.

This is why higher command wisely fixes the limit of office hours, but the regulation of this time and the physical and mental conditioning of subordinates is a command responsibility.

## The German Air Force and Its Failure

Digested by the MILITARY REVIEW from an article by Air Vice-Marshal Sir Thomas Elmhirst in "Journal Royal United Service Institution" (Great Britain) November 1946.

### The Overall Control

THE overall control of the German armed forces was surely the seed from which the final failure of the German Air Force grew. From the early months of 1942, Hitler was Commander in Chief of all the Services. There were Commanders in Chief of each Service: Raeder and then Doenitz for the Navy, Goering for the Air Force, and first Brauchitsch and then, after the winter of 1941, Hitler himself for the Army. Under Goering there was the Air Ministry virtually controlled by the Chief of the Air Staff. But directly under Hitler as Chief of all armed forces, and level with the Cs-in-C of the three Services, was the *Oberkommando der Wehrmacht* (OKW), a Supreme Headquarters Staff responsible to Hitler for the strategic policy of the war and the overall planning and intelligence. Here was a brilliant military staff, but their minds were centered on land warfare. There was one vice-admiral in this staff up against a field-marshal and three full generals; but the highest ranking GAF officer was one group captain.

The Chief of Air Staff on the GAF could only approach Hitler through his C-in-C—Goering who, as Reich Marshal, had many other jobs. The CAS could have little influence with the Supreme HQ staff with one group captain as his representative. His only hope was to get Goering to bully Hitler. After the first two years of the

war, Goering sat back and the GAF took a back seat in the Councils of State that directed the German war policy.

The GAF went into an exceedingly strong, well trained and equipped tactical air force as a support to an army for a European land war. Goering may have had other ideas, but not Hitler and the Supreme Command Staff. The GAF had no "functional" commands for studying the use of air fighting in home defense. They had no night fighters. It had no command for operating with the Navy, no shipping "strike" force. It had no Bomber Command planning the strategic use of bombers. In general, it was an unbalanced force to meet opposition.

### Early Success and Complacency

In Poland the GAF was used efficiently and correctly in accordance with Goering's doctrine of, first, blitz of the airfields, secondly, communications, and then full support in front of army spearheads. It had overwhelming numbers and little or no opposition. Its organization as a mobile tactical air force was suitable. Its balance, for this campaign—a large proportion of bombers to fighters, was good; mobility, reconnaissance, and signals were good.

In Norway, there was lack of opposing fighters and everything went well. Here, too, there was good joint planning on the task force level.

The overwhelming air force worked perfectly as a support force to the German Army in the advance into Holland, Belgium and France. The Germans deployed a total strength of 3,500 combat and 500 transport aircraft, while the Allies numbered between them some 250 RAF Hurricanes and 250 others in North France and the Low Countries.

In the summer and autumn of 1940 the GAF virtually stopped our English Channel shipping, but a really well trained GAF command working with the German Navy might have had much greater success.

In the winter of 1940-41, part of the GAF suddenly swung south and southeast and staged a short but bitter campaign against Malta. The Supreme Command probably called it off too quickly, but the initial resistance of Yugoslavia and the British landing in Greece needed a strong air force in the Balkans. The GAF was switched to that theater and again functioned well against little fighter opposition. The GAF in a few weeks virtually closed the Eastern Mediterranean to our shipping by controlling the narrow waters between Sicily and Tunisia, and between Crete and Cyrenaica.

In the summer of 1941 came the attack on Russia. Here the GAF was to carry out its classical *blitzkrieg* tactics. All went well at the beginning. The GAF claimed 22,000 Soviet aircraft destroyed in their 1941 campaign.

The highly competent GAF administrative and signal services were able to maintain, move and control the GAF on interior lines within Europe. Moves from France to Sicily, the Balkans, to Norway, or to the eastern front took place in a matter of days.

At the end of 1941, the GAF's and Goering's prestige stood high as war-winning factors. A period of complacency had arrived. The possibilities of the British, US and Soviet aircraft industries and their air training schemes were not

foreseen by the German High Command. Immediate steps were not taken by Udet and the German Air Ministry to increase their fighter strength, improve their fighter range, improve their naval co-operation, and organize a fighter command for Home Defense—except the night-fighter defense. A careful study of the Battle of Britain would have brought out these lessons; but there appears to have been no trained staff to make the study. There was a keen air intelligence staff, but they failed to sell their information to Goering. There was no strategical air reconnaissance force to find out what others were doing.

### The Battle of Britain

Why did the GAF not win the Battle of Britain? They had a big force and high morale, and operational direction was right at the start. Goering's tactics were to clear the RAF from its airfields or the air, with a small subsidiary effort on airfield factories, food supplies and Channel ports. But there was blind optimism, over-confidence, and lack of good intelligence about our fighter command organization.

They opened the offensive on 13 August with 485 bomber sorties and 1,000 fighter sorties, and had some success at first. But that was as far as the GAF got. To their amazement, they found that however they directed their raids the attacks were all engaged by our fighters. They soon discovered that unescorted bombers suffered crippling losses and that Stukas could not survive at all. The first plan—to clear the RAF airfields south of the Thames in four days—failed. The RAF had to be fought in the air and defeated by a battle of attrition.

The battle went into its second phase: fewer bombers, more escort fighters, and eventually no bombers and all fighters, with a few bombs tied on, and finally, fighters alone on sweeps at over 30,000 feet.

The battle was over. The GAF had had severe losses, and Fighter Command was again functioning from all its airfields. The GAF fighter losses were more than they could stand, especially as the RAF showed little sign of exhaustion. Kesselring held a high level conference at the Hague in the early days of September. He said that RAF was out, Sperrle said it had 1,000 aircraft left.

What, then, was wrong with the GAF? It was an unbalanced force for such a campaign. It had too many bombers and too few fighters, and the latter were of insufficient range, while nearly all aircraft were unarmored. The GAF had no clue to our radar warning system. They were also handicapped by the interference of Hitler at critical moments. The original plan was to destroy the RAF aircraft on the ground by bombing their airfields. Halfway through the battle the object was changed. Hitler was irritated by the first RAF night-bomber raid on a Berlin suburb on 27 August, and ordered the GAF bombers to avenge themselves on London. The attack began on 7 September by day and by night, and this continued until heavy losses to the bombers, coupled with insufficiency of bomber escorts, would not allow them to come by day, and then it continued by night. Attacks on airfields ceased.

One can almost say that the Battle of Britain, in German eyes, continued through the winter of 1940-41 and terminated in the middle of May, 1941 when the bomber force was switched to the Eastern Front for the invasion of Russia. This winter night campaign mainly directed against London was "Goering's war." It was ill directed and had no settled plan behind it, for London had shown in September that it could "take it."

The GAF, although not trained for night strategic bombing, carried out their attacks well. Their "beam" bombing caused us an unpleasant shock; but there was no

continuity of plan. There was a new plan in November—London first, then Coventry, Birmingham and Liverpool and the Rolls engine works at Glasgow, were attacked. Later it was ports. The heavy blitz on London on 10 and 13 May 1941 was a "cover" for the departure of the force to Russia.

There were other cracks in the GAF that showed up in 1940 and 1941. Our night bombers were flying pretty freely over Western Germany. They certainly had heavy flak to contend with, but the lack of a centrally controlled night fighter organization was apparent and had to be produced in a hurry.

Again, there was no trained anti-shiping strike force to work in with the German Navy. There was a delay in getting such a force started and there was constant friction with the Navy. When they did get something going, it was too late. By the summer of 1941, our merchant shipping had the necessary antidotes to the unescorted lone bomber, and the GAF had no good long-range fighters. In the spring of 1941 there was a half-hearted strategic bombing attack on Egypt, but the plan of attack was changed to nightly.

#### The Turn of the Tide

With 1942 came the turn of the tide. The GAF was extended: it could now nowhere give a complete "umbrella" to the Army. The shortage of fighters that showed up in the Battle of Britain was still there. The night fighter force had of necessity to be increased. The 100 per cent reserves of aircraft and crews with which the GAF had started the War was expended. The period of complacency of 1940-41 was having its effect.

Worse was to follow at the end of 1942 and in the spring of 1943. The *Afrika Korps* was in full retreat. Likewise a German army was surrounded at Stalingrad. Hitler and the Supreme Command ordered the GAF to carry supplies to those beleaguered forces and, at the last, to

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evacuate them. The cost was literally hundreds of Ju-52 transport aircraft, hastily converted bombers, and long-range Atlantic bomber-reconnaissance aircraft with their experienced crews. The GAF flying training schools had to give up numbers of their advanced training aircraft and experienced instructors. Goering, himself, had stated that the Stalin-grad and Mediterranean operations at the end of 1942 and early 1943 were the death knell of the GAF bomber force.

Further heavy bomber losses were incurred in the raids on England in April-May 1942. Hitler, irritated by Bomber Command's successful mass raids on Lubeck and Rostock, switched bombers from antishipping and minelaying duties, and further increased the force with valuable instructional crews and aircraft from the operational training units. The GAF training scheme and the support given to the German Army on the Russian front suffered. The losses had been very heavy and were mounting on all fronts. The Allied landing of November 1942 in Algeria entailed a further extension for the GAF. The South of France and Sardinia had to be occupied and the air attacks on the Arctic convoys had to be abandoned. The Russian front had to be denuded of aircraft again. The GAF was over-extended.

#### GAF Defensive, 1943-1944

In 1943, RAF Bomber Command forced the GAF to form its first "functional" command. Air Fleet Reich was charged with the air defense of Germany. Our night attacks were taking too big a toll, and the United States 8th Air Force had commenced its attacks in daylight. Production was speeded up of ME-110, and the JU-88 was called in to help to an increasing extent and eventually became the main night-fighting weapon at the expense of the bomber force. In the summer of 1943, the GAF was bombed out of Sardinia and Sicily with very heavy losses, and its

Mediterranean contingent was nearly inoperative when the invasion of Sicily took place.

Things were little better on the Eastern Front. With a shortage of fighters, local superiority could only be obtained by concentration.

The GAF began late in 1943 to fall into discredit among its own people and lost confidence in itself and its ability to stop the bombing of the Reich. In addition to the strained relations with the Navy, relations between the GAF and the Army deteriorated. Goering's prestige declined, and the lower levels of the GAF began to lose confidence in their superiors and the High Command. In 1943, Jeschonnek, Chief of Air Staff, and Udet, Chief of Supply of the GAF, committed suicide.

In 1944, things only got worse. The day raids of the 8th and 15th US Air Forces, accompanied now by their escort fighters, began to get into their stride with their heavy attacks on aircraft production factories and oil. The appearance of the US long range escort fighters, Mustangs and Thunderbolts, over Berlin, took the Germans by surprise. Goering remarked that the war was lost.

Every priority was now given to the production of fighters, and the bomber force to all intents and purposes was scrapped. Fighter production was doubled. By the end of June 1944, two-thirds of the GAF fighter force was defending the Reich from West, North and South. Still the Allied bombers came by day and night, and one synthetic oil plant after another was shattered.

#### The Invasion of Normandy

A word must be said here of the GAF's failure to hinder the invasion of Normandy. It was planned to have a force of nearly a thousand aircraft—"ship strike" and bombers, and an Air Corps was brought North from the Mediterranean.

But that plan was never realized, owing to the interruption of the bomber program in favor of concentration on fighters and to frittering away the bomber force in the night raids on London and other English cities between January and April 1944. This misemployment of the anti-invasion force was by order of Hitler for reprisals, and for home propaganda. The 200 odd bombers remained in April from the original 550 at the beginning of the year. The "ship strike" force, seriously reduced in the Mediterranean fighting of the winter of 1943-44 could only recover to a strength of 200-250 aircraft, making a total force of 400-450.

History will, I think, record their complete failure to fly reconnaissance during those last pre-invasion days as the GAF's biggest failure. If ever reconnaissance needed fighting for, surely it was then.

The disposition of the GAF fighter types in the west on D-day is of interest. There were only 155 fighters and seventy-five fighter bombers in France, Belgium and Holland. The rest were protecting the heart of the Reich and the Eastern Front. Their D-day sorties were less than a hundred for fighters, and the night bombers and "ship strike" force, which Goering had called "the spearhead of the anti-invasion forces flew 175 sorties with little effect due to untrained crews and allied night fighters. By July, the GAF was spending most of its time in the west in attempting to defend its own airfields.

August 1944 was the black month for the GAF. On 11 August, owing to fuel shortages, restrictions were ordered on all flying activities other than those operations connected with the interception of raids penetrating into Germany. There had been cuts in training and transport flying, but never before for operational flying. From this day, the GAF in the west was practically eliminated as a factor of military importance in land operations.

In September 1944, the single-engined fighter force had increased to nearly 2,000, less than a fifth of which were on the Eastern Front. There were also 900 twin-engined night fighters. At this time, seventy per cent of the whole GAF was attempting unsuccessfully to protect its oil industry. But the efficiency of the GAF was dwindling rapidly. While in June 1942 the GAF could keep up a sortie rate of 1,800 a day with a front line strength of 4,800 aircraft; in June 1944, the front line air force had risen to 5,500, but the sortie rate, due to poorly trained aircrews, was operationally half as effective.

Lack of training, lack of fuel, lack of serviceability, unreliable engines, airfields bombed out or shot up, all had their effect, and though the numbers were there fighting, efficiency was not.

#### Aircraft Production in Germany

The German aircraft industry was in a healthy state at the beginning of the war, but even after the Battle of Britain it remained on a pre-war production level. A short war was expected and it was not till 1941 that expansion was started, and not till the end of 1943 that a real effort was made to produce day fighters in sufficient quantities. Great difficulties were encountered by the Director-General of Supply at the time to step up fighter production, and he carried out his program behind the back of Hitler and Goering, who were still shouting for more bombers and more transport aircraft to assist the German Army on the Eastern Front; and this with their base of supply—the German towns and industry—falling in ruins behind them.

Of the types of aircraft in the GAF in 1942, only one successful new model was subsequently produced in numbers—the FW-190. When they saw the need for long-range bombers later, it was too late, and all production was then concentrated on day and night defense fighters. Time and again, the heads of the GAF Air



Ministry called for more priority of the country's industrial effort for aircraft production for home defense, but they could not get it until July 1944, when Allied bombers had already virtually destroyed their fuel industry. Priorities went according to Hitler's whims, and tanks, U-boats and guns came before aircraft almost till the end of the war.

With regard to jet aircraft, the ME-262 was developed in 1937 and the first operational type was flown in 1941, but it was rejected by the German Air Ministry. It was not till 1943 that production was restarted. The first output of ten jet aircraft arrived in April 1944, the output rising to sixty in July 1944. But there was much delay in putting them to their operational role. Hitler insisted that they should be used as bombers, and it was only by stealth and behind Hitler's back that the Fighter Command managed to get fifty into operational fighter units in October 1944; and not till March 1945 did Hitler allow all jet production to be used for fighters. He then put an SS General in charge of jet units and crews.

In the autumn of 1944 it was too late to make the full operational use of the jets. They did, however, bring reconnaissance results to the German Army on the Western Front for the first time since before the invasion.

### The Fuel Industry

The failure of the GAF to protect the German fuel industry was a resounding one, which in the end, besides grounding the Air Force, immobilized the Army and Navy. In modern war, armed forces that cannot move swiftly to attack or to meet attacks have little hopes of success.

The GAF's difficulties due to fuel shortage began in the summer of 1942 and increased to the end of the War, and it caused a constant limitation in flying training hours. In September 1944 fighter

production was at its peak at nearly 3,000 a month, but aircraft were being delivered to operational squadrons without makers' flight tests, owing to shortage of fuel. The result was unreliable engines. Also, practice flying was denied to the GAF for the latter part of the War.

One might say that when the GAF fighter production arrived at its highest in 1944, there were enough to have defended their vital oil supplies had they had the well-trained pilots and the ample fuel supplies of two years earlier.

### The Training Scheme

It would be fair to say that in 1939, 1940 and 1941 the GAF had a well trained, competent body of men. They may have been ill directed and ill led, but they could handle their aircraft well and pressed home their attacks relentlessly in spite of heavy casualties. The same could not be said in 1943 or 1944, though of course there were exceptions.

The failure, I suggest, must be put down to the policy of the German Air Ministry which, when casualties became heavier in 1942, and gaps had to be filled, ordered the training schools to concentrate on quantity at the expense of quality.

Until early 1942, fighter wings each had a spare reserve squadron for holding and polishing immediate reserve crews. These units were disbanded just at the time that the RAF in the field were, as a result of experience, imitating similar units. Bomber crew training was contracted that summer due to temporary shortage of fuel. Thereafter, the flow of pupils through the schools became uneven, and was made more so at the end of the year when instructors and aircraft of the advanced training schools were withdrawn to augment the air transport service at Stalingrad and in the Mediterranean.

In 1943, the output of pilots and crews was nearly 10,000—double the output in 1942, but the quality was probably not

half so good. There was a shortage of operational type aircraft in the schools. The front line was given all the new production, and the crews continued to be turned out of the schools, but with half the experience.

There was a shortage of instructors in 1943 which was never made good. There was the fuel shortage in 1943 and 1944. Night fighter pilots went into action with half the flying hours of our own; day fighter pilots with even less than half. Training establishments were being "shot up" by US Mustangs and Thunderbolts with consequent shattering disorganization.

In 1944 the training organization had sufficient operational type aircraft again. They were turning out 900 fighter pilots a month, but of poor quality.

#### The Ardennes Offensive

In the autumn of 1944, Hitler decided to stake all in the west on the Ardennes offensive. He ordered the virtual disbandment of the Home Defense fighter force and sent the units to the Western Front to act as a close support force for the Army. Thus 2,300 aircraft were concentrated.

Their maximum effort was some 600 sorties a day, which for a force of 2,300 aircraft was nothing. Numbers of inexperienced pilots were reporting that they could not complete their sorties, due to engine troubles. Goering had to order that sorties would be continued with misfiring engines, or else—!

#### Conclusions

First, the GAF was trained as an Army support force, and was, therefore, unorganized and untrained to carry out those other necessary functions of an Air Force, i.e., home defense, strategic bombing at ranges beyond the immediate requirements of armies, and attacks on shipping. There was lack of foresight here on the part of Hitler, Goering and the Supreme Com-

mand who had only envisaged an air force as a close support force of the German Army. Hitler held this view to the end.

Secondly, there were blind optimism and complacency in 1940-41 in high circles, where it was thought that in a short war, German air forces would be sufficient in numbers to compete with and defeat quickly the air forces of Great Britain and then Russia. Hence no steps were taken in 1941 to build up the GAF for a long war and of a sufficient size to meet its commitments in Europe and Africa. For the last three years of the War it could establish ascendancy nowhere.

Thirdly, operational pilots and aircrew are probably the most highly tempered weapon in war. To get the best out of them and to keep their morale high, they must be well trained, well mounted and well directed. Due to casualties and lack of fuel, the GAF aircrew training standard was lowered by fifty per cent, half way through the war. Further, the GAF pilots lost confidence in their leaders and in the direction of their Commander in Chief. Their morale sank, though their discipline remained good until the last, and though the force was strong in fighters, in the final years the pilots were no match in combat with their enemies.

Finally, it can be said that no air force or Air Ministry could have functioned satisfactorily shackled as it was by:

(I) *Hitler*, with his corporal's outlook on air matters, who, if told an unpalatable truth by his air advisers, dubbed them defeatists, and who changed the planned aim of his air force on three occasions, due to his personal irritation. Even when his fuel industry was being bombed to destruction, he still considered the Air Force solely as an aid to his Army and ordered the jets to be bombers.

(II) *Goering*, always worried about his prestige; a man with many jobs other than commanding the Air Force; full of jealousies of the Air Staff and the Supreme

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Command, and unwilling in the latter years to approach Hitler for priorities for the Air Force or allow his Air Staff to approach Hitler. At the same time, although lacking experience, he meddled with the tactics of his air crew, and he was out of touch with his lower commanders.

(III) *The Supreme Command* (The Great General Staff), to whom the GAF had to go for its overall plans and priorities in manpower. The GAF had next to no representation and the Staff had no experience and little understanding of the problems of modern air warfare. The

Staff, though warned, failed to foresee the oncoming clouds of bombers and escort fighters that were to destroy the German fuel industry and so immobilize all their armed forces.

On reflection, one wonders what the German Air Force, coupled with the German scientists and aircraft production factories, might have achieved, if they had had as their directing body, the British organization of the Cabinet Defense Committee, the Chiefs of Staff Committee, and the latter's sub-committee of Inter-Service Planners and Inter-Service Intelligence teams.

## Air Attacks on Railways

Translated and digested by the MILITARY REVIEW from an article by Dr. Theodore Weber in "Flugwehr und Technik" (Switzerland) April 1947.

CLAUSEWITZ states that communication lines must neither be permanently interrupted nor be too long and difficult, "for some strength is always lost in a long line" and a "weakening of the army will result from it." Disruption of the enemy transportation system by air attack claimed an important place in the Allied plan in World War II, especially after the landing on the European continent.

The air offensive reached its peak on 22 February 1945 with a commitment of 9,000 planes, and on 19 March 1945, with a commitment of 5,000 planes. The last operations of this offensive resulted in the isolation of the Ruhr pocket.

We shall limit ourselves here to a short account of the most important destructions.

1. France: In France, out of 322 large railway yards and stations, 115 (thirty-six per cent) were destroyed or badly damaged, in the main by Allied air attacks. This number included the twenty-four most important switching yards. Seven hundred sixty kilometers of main

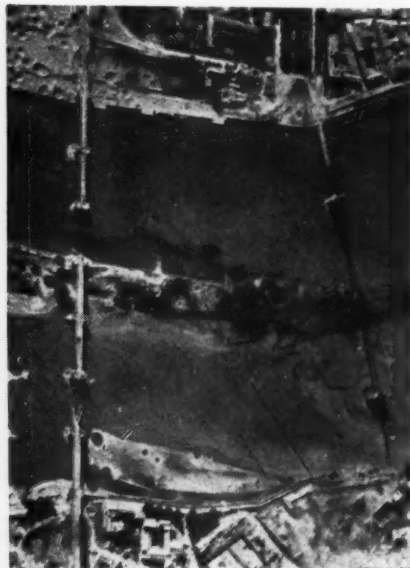
tracks and 2,350 kilometers of station tracks were destroyed (a total of 1.3 million square meters of track area bombed by planes). Furthermore, seventy-one out of 130 locomotive depots (fifty-six per cent) and four out of ten locomotive repair shops (forty per cent) were destroyed in air attacks. Five hundred seventy-one control towers were rendered useless by bombs. In addition, 1,900 bridges were destroyed and twenty-seven tunnels rendered impassable, the bridges including all of those over the Seine, the Loire and their tributaries.

2. Belgium: In September 1944, the Belgium railway lines were usable only over a length of 2,916 kilometers (sixty per cent, and 466 railway over-and-underpasses had been destroyed or badly damaged by bombs. Furthermore, 494 important buildings, including twenty-five locomotive depots, were damaged in air attacks. Of a total of eighteen Belgian railway car manufacturing plants, thirteen were destroyed or heavily damaged.

3. Holland: The Dutch railway lines

comprised 3,159 kilometers of tracks. Of these, a total of 1,954 kilometers (sixty-two per cent) may be regarded as having been destroyed by September 1944.

4. Germany: In Germany, naturally, the present British occupation zone, the Ruhr district, was the hardest hit by air attacks. Of 12,000 kilometers of tracks,



Rail and vehicle bridges in France destroyed by bombing. (AAF photo.)

only 1,000 kilometers (8.3 per cent) were still usable. In the French zone, it is known that on 1 January 1947, 300 kilometers (over five per cent) of the railway lines were still usable.

5. Italy: The Italian railway lines had, at the beginning of the war, a total of 17,200 kilometers of tracks belonging to the State Railways, and 5,990 kilometers of private lines. Twenty-six per cent of the total, 6,000 kilometers, were destroyed. Furthermore, sixteen per cent of all railway bridges were destroyed by air at-

tacks, among them the big bridges across the Po, Tessin, Adda, Serio and Oglio. The sixteen per cent of railway bridges damaged and twenty-six per cent of railway lines damaged is relatively slight in comparison with the damages suffered by the standing structures of the Italian railway lines. Here the figures are forty per cent of the station buildings, forty-nine per cent of the freight houses, fifty-two per cent of the repair shops and sixty-seven per cent of the locomotive depots.

The attacks of the Allied air forces on locomotive depots occupied a place of considerable importance in the general air offensive against railway objectives. The reason for this becomes obvious when attention is called to the importance of these depots in railway operation in countries with steam lines. The steam locomotive requires frequent, at least daily, visits to the depot and is dependent on the not overly numerous installations where coal and water may be taken on. If the latter places are destroyed, practically all regular service comes to a halt.

It is because of this that the electric locomotive is considerably superior to the steam locomotive as regards air attacks. The electric locomotive is not only practically independent of refueling and rewatering installations and ready for use at all times, but also much more robust than the steam locomotive which is put out of operation by the relatively slight damages resulting from the fire of plane weapons. In addition, power lines and fixed electrical installations have proved to be amazingly easy to repair so that even heavy bombing attacks failed to cause interruptions of any length except in those cases where the tracks were also destroyed. There is complete agreement in the findings in France and Germany relative to these points. They show that, in general, the electric locomotive was far less vulnerable than it was com-

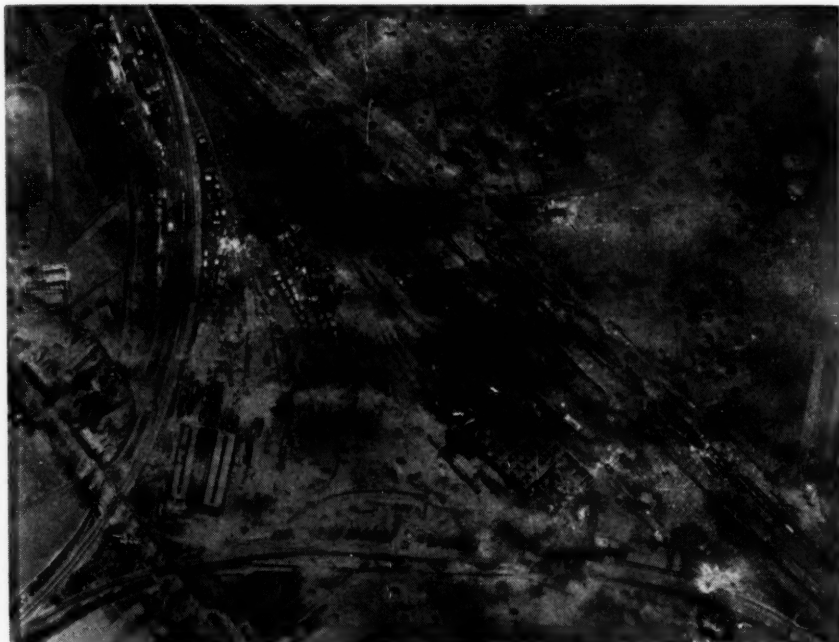
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monly believed it would be before the war.

The bombing station buildings, control towers, tracks and bridges very often failed to produce the expected results. The greatest results came in attacks against objectives which required the greatest number

in Holland. There is a particular reason for this. The exiled Dutch government in London, when the Germans were involved in difficult fighting in southern Holland late in 1944, ordered the Dutch railway employees to refuse to work. In retaliation for this strike, the Germans took away



Rail junction near Brussels after bombing. Note destruction of rolling stock. (AAF photo.)

of work hours in construction maintenance and repair, or scarce materials. In railway systems, such vital installations are locomotives and coal, freight and passenger cars.

In determining the losses in rolling stock due to Allied air attacks in France, Belgium and Holland, allowances must be made for German requisitions. The commandeering and removal of railway equipment was carried out on the largest scale

the greater part of the existing Dutch railway equipment. Even though up to the fall of 1944 the Allies had carried out no systematic air attacks on Dutch railway targets, 210 Dutch railway employees had been killed by this time. More than 500 steam locomotives, thirty-six Diesel locomotives and an indeterminate number of freight and passenger cars were now taken to Germany. The German requisitions in France and Belgium were of

another character. In these countries, there were no retaliation measures and requisitions were not on so large a scale. Certain railway equipment, particularly about half of the French freight cars, was regarded as spoils of war and taken to the eastern front. That portion of the French, Belgian and Dutch equipment affected by requisitions requires separate treatment. Also it should be stated that a distinction must be made between the removed equipment that was used in Germany itself (which was the case with the Dutch equipment), and that used in occupied countries for German purposes (Belgian locomotives), and that used mainly on the eastern front (French freight cars). In the first case, the equipment would have been found in western Germany at the end of the war. If it was not there, it must be assumed that it was destroyed by Allied air attacks against railway targets in Germany. The figures are virtually the same, however, whether we regard the equipment as remaining in the occupied countries or as having been removed to Germany, for the equipment which was taken to the present Russian occupation zone and which has not been reported by the Russians must be of a relatively small amount. In contrast with this, it cannot be determined what proportion of French freight cars were destroyed in Germany by air attacks and what proportion was lost through other causes. Because of insufficient data, therefore, the losses in French freight cars must be estimated at a minimum of 50,000. The Belgian losses in freight cars was a little over fifty per cent; the Dutch, seventy-three per cent. Since it is not known that any large numbers of Belgian freight cars were taken to Germany, it can be assumed that the losses occurred, in the main, on the Belgian lines. Air attacks, in this case, must have constituted the main cause for the shrinkage. The Dutch losses in freight cars probably

were so high because the Germans likely made extensive use of the Dutch equipment in the Lower Rhine area. One of the points of main effort in the Allied air offensive against German railway objectives from October 1944 to February 1945 was in the Lower Rhine area.

Sixty per cent of the reduction in the number of Dutch freight cars can be attributed to air attacks. The corresponding figures for the destruction of passenger cars are about the same. In the case of France and Belgium, finally, about one-twelfth of the total railway equipment destroyed in air attacks is attributable to German air activity against railway equipment, in the western campaign.

The easiest to assess are the figures on losses in locomotive parks. The heaviest losses were suffered by the French state railways, but the Belgian and Italian losses reach nearly the same figure. The French locomotive parks suffered in the five-year period, a reduction of from 14,000 to 3,700 locomotives in running condition. If badly damaged, but repairable locomotives are counted, there still remains a loss of around fifty per cent.

Our figures are confirmed by comparison with those released on post-war German and Italian railway equipment. In both countries, the destruction of railway equipment was due, in the main, to air attacks. In the case of Germany, the figures are lacking for the French zone and, particularly, for the Russian zone of occupation. Hence it cannot yet be said what percentage of the German state railway rolling stock is to be regarded as lost. The total loss appears, according to a first estimate based on losses sustained in the three other zones, scarcely higher than fifteen to twenty per cent. One reason for this perhaps, is the fact that the Germans gave preference to the employment of a foreign equipment over the most hazardous stretches of their



railways. Also, the relatively small total losses show the effectiveness of camouflage and active air defense. Yet the figures for damaged equipment reached a height unequalled in other countries. The percentage of damaged locomotives was sixty-four per cent in the American zone, and fifty-four per cent in the British zone; passenger cars fifty per cent and 43.5 per cent; and freight cars thirty-two per cent and nineteen per cent respectively.

Very heavy losses were inflicted on the rolling stock park of the European railways by air attacks. This is true for both Germany and Italy, and the German occupied western European countries, France, Belgium and Holland. In the case of the latter, it makes no essential difference whether their equipment was left in their own countries or whether it had been moved out by the Germans. In the latter case, most of it was destroyed in Germany. Air attacks also had a large part in the destruction of the rolling stock of certain southern and eastern

countries, Yugoslavia, Greece and Poland. In World War I the losses in rolling stock resulting from artillery fire, sabotage and other causes were insignificant because the air arm was hardly able to produce any great impression on the enemy's supply lines. In the main, the losses suffered by the railway lines in all the countries affected by World War II were heavy. Only gradually may differences be discerned. These, however, are attributable to factors that are independent of the tactical and operational possibilities of the air arm. Thus the German railway lines suffered low total losses, through high percentage losses; and in the case of the Italian railway lines, though a higher percentage of the rolling stock was totally destroyed, yet a smaller figure is presented by the total losses. About in the middle are France and Belgium, whose railway lines present a fairly high figure, yet with somewhat less defective equipment left over for the post-war period.

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## "V" Force—Phantom Army of Burma

Digested by the MILITARY REVIEW from an article in the "Indian Army Review," October-November 1946.

IN April 1942, the Burma Army was fighting its way back to India. In a few weeks, Burma would be completely lost, and the Nipponese Army would be standing at the gateway to India. Somehow the Indo-Burma border, a thousand miles of trackless jungle-covered mountains stretching from China to the Bay of Bengal, must be held until a new army was ready to undertake the defense of India and the reconquest of Burma.

It was held. This was the achievement of "V" Force, a guerrilla army consisting of ten thousand hill tribesmen and some platoons of the Assam Rifles, com-

manded by a handful of British officers.

"V" Forces began as a reference in General Headquarters, headed "Guerrilla Forces, Eastern Frontier,—Plan 'V'." When the plan was put into operation, the Roman V was used to make the title "V" Force.

The man to whom the organization of "V" Force was entrusted was Brigadier A. Felix-Williams. As commander of the Tochi Scouts in Waziristan for fifteen years, he knew nearly everything there was to know about guerrilla fighting. His orders were: "Hold the border for six months."

At Jorhat, late in April, the commander of "V" Force found himself commander of a headquarters—and nothing else. He had neither guerrillas nor officers, but it was known that the tribes would fight in defense of their land, if properly led.

Ideal officer material was available and a month of traveling brought the "V" Force staff into contact with them. Planters, political officers and men of the Burma Forest Service, who knew the country and the people intimately, were given army commissions, and under them "V" Force began to take shape in five zones. Forces of approximately 2,000 irregulars each were formed among the Negas, Kukis, Lushais, Chins and the Tripura tribes.

In four weeks, the new guerrilla army sprang from a paper plan to a fighting force. The original Plan "V," i.e., to organize a guerrilla force on the Assam frontier, to operate behind the enemy lines in the event of a Jap invasion of India, was now relegated to second place. The primary role of "V" Force would be to provide intelligence for the army and to harass the enemy on all routes leading from Burma to India. Guerrilla training schools were established at Kohima, Sadiya and Haflong.

The nucleus of the "V" Force organization in each zone in Assam was formed by platoons of the Assam Rifles, the quasi-military police force of the Province.

#### Growing Pains

To obtain arms and ammunition, food and clothing, "V" Force had to rely on its own initiative. A supply headquarters was established at Calcutta, and dumps at Jorhat and on the Dimapur-Kohima road.

The greatest shortage was rifles. The 6,000 rifles promised at general headquarters never turned up. Many of the arms originally used by the guerrillas were bought in the bazaars of Calcutta, Bombay or Delhi.

In May 1942, certain tiny places on the Indo-Burma border were assuming a strategic importance, and it was to these places, to Ledo, to Kohima and to Imphal, that the organizers of "V" Force went to begin to fight.

At Ledo, a railroad town, from which General Stilwell was about to start his Chinese-American drive on north Burma, refugees were pouring in daily. Two "V" Force agents were struggling across the Chaukkan Pass from Fort Hertz. To rescue them, and many others who made this impossible journey, was one of the first jobs of the Assam Rifles in that area.

As "V" Force agents moved southeast from Kohima, whole villages gave their fighting men to the new army. In the remote Somra Tracts and near the Chindwin, officers of "V" Force took up their station in the jungle, some to remain there for two or three years. Rifles, rice in waterproof bags and silver rupees came up and were hidden away. The Kohima zone of "V" Force became one of the most efficient of the entire organization.

Imphal, capital of Manipur State and base of the 4th Assam Rifles, was also busy receiving thousands of refugees in the month of May. It was the Indian end of the one road out of Burma.

The 23d Indian Division was preparing to hold the frontier. Here "V" Force could perform an invaluable service by screening these preparations and providing intelligence information.

Further south, at Aijal in the Lushai Hills, the Lushais were being armed and organized, stiffened by men of the 1st Assam Rifles.

#### Maturity

The build-up in all areas was growing. From merely seeking information, "V" Force graduated to fighting for it. At the end of May, as soon as the Burma Army had pulled out, a "V" Force patrol made the first long distance reconnaissance back into Burma. It crossed the Yu River

and made for the Chindwin, accompanied by a small party of Assam Rifles and some Kuki scouts. Reaching the Chindwin, they chose a hideout and watched several parties of Japs moving on the river.

"V" Force was now a going concern and the regular commanders began to appreciate the possibilities of an irregular organization. Guerrillas cannot fight by the book and cannot be given a set task. But once given the intention of his higher command, the guerrilla commander will work it out with what resources he has. "V" Force became an indispensable part of the defense of India's eastern frontier. Later, when defense changed to attack, they were to prove equally valuable.

### Secrecy

From the beginning, "V" Force was kept completely secret, and remained a secret until the end of the war. Until 1944, no comprehensive historical record was kept. Many of "V" Force's most exciting stories were never set on paper and exist now only in the memories of those who lived them.

When Brigadier Felix-Williams went to Delhi to inaugurate "V" Force, he met another guerrilla warfare expert. It was Brigadier Wingate, then engaged in the early planning of his scheme for long range penetration into Burma. The two brigadiers exchanged ideas and later Wingate sought the advice of "V" Force officers about routes into Burma.

When the first Wingate expedition went into Burma, "V" Force helped them both on the inward and outward journeys, and supplied them with explosives, shotguns and other stores. This aid was never publicly acknowledged, for "V" Force, the secret army, remained unsung when the Wingate story was published.

Among other tasks undertaken by "V" Force was that of searching for allied planes which had crashed inside Burma. More than one "V" Force officer lost his life in this way, and many airmen and

soldiers stranded behind Jap lines had reason to bless "V" Force.

"V" Force was maintaining free routes into Burma, and out of it, under the very nose of the Japanese.

Each zone of operations presented the organizers of "V" Force with a different problem. The Chittagonians and other tribes who inhabit the Arakan coastal area were unsuitable guerrilla material. Accordingly, the area had initially been entrusted to guerrillas recruited from Tripura State, aided by some platoons of the Tripura Rifles.

In those days, the Arakan was not yet a general battleground. The new "V" Force organization edged skillfully forward and obtained much valuable intelligence of the Jap dispositions in Akyab. They even sent agents disguised as fishermen in sampans into the Baronga Islands, further down the coast. The Tripura Rifles killed ninety Japs at Rathedaung, though the guerrillas themselves suffered heavily on one occasion by putting on a regular attack on a strong Jap position. They soon learned that direct attack was outside their scope.

When the Japs first attacked in the Arakan in the spring of 1943, "V" Force had an efficient espionage system ready. Throughout the campaigns of 1943 and 1944, they continued to operate, carrying out many raids and ambushes and supplying commanders with much of their tactical intelligence.

The Arakanese Mohammedans who worked as guerrillas on this front were totally different types from their counterparts in the Chin and Lushai Hills. For the most part, they were fishermen or rice growers, though many of them had worked on tramp steamers, and had traveled far afield.

Along with the Burma Triangle from which the Kachins operated, the Chin Hills was the only "V" Force zone lying wholly in Burmese territory. Undoubtedly the

efforts of "V" Force saved the Chin Hills from falling to the Japs in 1942. But there was dissention among the Chins, in July and after a Council of War, they asked the British administration to withdraw.

To meet the emergency, Brigadier Felix-Williams set out from Imphal on a 600-mile tour of the area. His arrival with stores, and the appearance of British planes overhead helped to turn the scale.

All along the front, the actions fought by "V" Force were on a small scale. But in aggregate, they helped to dissuade the Jap from making a push at a time when it would have been extremely difficult to stop him. The Jap knew and respected "V" Force.

When frontier activity flared into invasion in 1944, the Chin Levies (under the name Hasforce) remained on the flanks of the Jap 33d Division. And when the 5th Indian Division advanced six months later to take Tiddim, Fort White and Kalemmyo, the Levies operated as a roving column widely on the front and flanks.

Another force which rendered invaluable service in the 1944 campaign was the Lushai Brigade. The Lushais, though of similar stock to the Chins, are a more advanced people. A guerrilla organization was gradually built up, and in the absence of a direct threat, kept watch until 1944.

In the spring of 1944, it became necessary to prevent any advance to the west by the Jap division then attacking Imphal. On 30 March, the Lushai Brigade was formed under Brigadier P. C. Marindin.

The new Brigade was based on the old "V" Force organization, plus three battalions of Infantry. Initially they held the Burma border, west and northwest of the Chin Hills. Their presence there helped to bolster the morale of the Chin Levies, which naturally declined as the Japs overran their country.

When the Jap retreat began, the Lushai Brigade crossed the Manipur River south of Tiddim, and began raiding the Japs in the Fort White area. By 30 September, they had killed 1,354 of the enemy.

The Brigade continued to take part in the general advance of the Fourteenth Army till January 1945, when they were withdrawn to India, with the exception of the Chin Hills Battalion, the Chin Levies (who had joined the Brigade during the advance) and the Lushai Scouts.

In the Naga Hills of Assam and around Manipur, "V" Force had its earliest beginnings, and it was in these areas that it was put to its hardest test, when the Japs invaded India in 1944. It was partly through advance information of the Japanese offensive given by "V" Force scouts operating beyond the Chindwin, that Fourteenth Army was able to re-group for the battles of Kohima and Imphal. During these battles, the Assam zone of "V" Force both took part in the fighting, and acted as a first-class intelligence organization.

When the Japs broke through north-east of Imphal, an Indian paratroop brigade, which was training in the area was thrown in to stem the advance. They became involved in very heavy fighting south of Ukhrul, and many Gurkha and Indian paratroopers afterwards acknowledged that they owed their lives to members of "V" Force. The material available to "V" Force there consisted of Nagas and Kukis, both warrior races.

At the epic battle of Kohima too, where "V" Force drew back to form part of the garrison, they showed what they could do in straightforward defense and attack. The Nagas closely supported the men of the British 2d Division, many of whom owe their lives to the outstanding services of the Nagas as stretcher-bearers in some of the most difficult and precipitous country in the world.

By the end of 1943, "V" Force was fi-

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nally organized into seven self-contained zones—the Triangle, Ledo, Kohima, Imphal, the Lushai Hills, the Chin Hills and the Arakan. Headquarters was at Comilla. This set-up continued until August 1944, except in the case of the Ledo zone which was handed over to the United States Army command in January of that year.

After August, 1944, "V" Force operated in two groups, the Assam group and the Arakan Group. By the end of the year, however, Fourteenth Army was well into Burma and guerrilla warfare in the border hills was no longer necessary. The

guerrilla forces were therefore disbanded.

In January 1945, "V" Force was reorganized and began to operate as a mobile intelligence screen on the flanks of the regular troops. With the Fourteenth Army constantly on the offensive, they were no longer expected to harass the enemy and disrupt his communications.

This new "V" Force was in at the finish of the war in Southeast Asia. It was still drawn largely from the Assam Rifles, whose service in the Burma war thus extended from April 1942, until the reconquest of Burma was completed.

## The French Far East Marine Brigade

Translated and digested by the MILITARY REVIEW from an article in "La Revue Maritime" (France) March 1947.

THE National Marine participated in the Far East Expedition, not only by sending to Indo-China the greater part of the vessels at its disposal, but also by placing under the Expeditionary Corps commander, a large formation designated as the Far East Marine Brigade (BMEO).

As this unit is now being dissolved to permit the Navy to create a new corps, the "Indo-Chinese Amphibian Force," it is fitting to review what this brigade has been and what it has done.

### Composition

The brigade comprised:

1. First Armored Regiment of Marines (RBFM), veteran unit of the campaigns of France and Germany, which was sent into Indo-China as a rifle unit without armored vehicles.
2. One group of marine cannoneers, which was organized and trained early in 1945 in the camps of Arcachon and Nauyas, in the Landes.
3. A repair company.
4. A signal company.
5. An administrative section.
6. A medical section.

Total, 2,500 men, including 150 officers.

The brigade was sent to Indo-China from September 1945 to February 1946. It arrived with no floating equipment at its disposal and took part in the first operations as rifle troops organized as commandos.

Soon, however, it was assigned the task of manning small boats used in transporting troops, stocking them with supplies, and using them on the innumerable small streams of Indo-China in combat operations. The brigade thus built up a flotilla which continued to grow during 1946 to a point where at present it has more than 110 boats.

The principal types of boats used by the brigade in combat are:

#### 1. Landing craft:

(a) LCA (Landing Craft Assault), armed with heavy and light machine guns and small caliber mortars. Capable of carrying a landing section, and because of the silence of their motors, useful for surprise operations, particularly at night.

(b) LCVP (Landing Craft, Vehicle and Personnel), of the same type as the pre-

ceding, but of greater capacity, permitting the transportation of a jeep or the installation of a 20-mm gun.

(c) LCS (Landing Craft Support), armed with mortars and an automatic turret with heavy machine guns used for protecting the boats.

(d) LCM (Landing Craft, Medium), capable of transporting one tank, or two landing sections without armament.

2. Self propelled iron vessels of 100, 150 and 200 tons. Powerfully armed with 25-mm rapid fire guns in addition to mortars and automatic weapons, these vessels are of slight draft and permit relatively comfortable transportation of one landing company.

3. 150-ton motor junks. Constructed of wood by the Japanese and armed with one 75- or 40-mm gun and secondary weapons, these boats were principally used for the transportation of supplies to posts cut off from their base by land, and to river stations; also for the support of elements fighting on land.

#### Activities of the BMEC

The first efforts of the brigade after its arrival in Indo-China, were directed toward crushing the rebel forces in Cochinchina and the reestablishment of river transportation between Saigon and Phnom-Penh, where it established its first river station.

Toward the end of February, the BMEC broke up into two portions, and one half left for Tonking where, after having participated in the landing operation of 8 March at Hai-Phong, it chose this port as a base for future operations.

This northern flotilla founded the coastal stations of Port-Wallut, Hongay and Vachay; sent a detachment to Hanoi and Nam-Dinh; and then took part in local operations such as that at Tien-Yen, and suppressed piracy in the Bay of Along.

Meanwhile, the southern flotilla undertook the pacification of Cochinchina and the Gulf of Siam, reestablished navigation on the Mekong, from Phnom-Penh to Vientiane, founding the river stations of Savannakhet, Mytho, and Cantho, and finally participated in the reoccupation of the provinces restored by Siam, and was first to enter Battambang.

The brigade also sent small detachments under the command of an officer to Tourane and Nha-Trang on the coast of Annam, and sent a platoon to reoccupy the Parcels islands.

Lately, during the course of the fighting at Tonking, the BMEC was on the front and assisted greatly in reestablishing the situation although suffering heavy losses.

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The spiritual convictions and the knowledge that the cause for which it fights is just increase the efficiency of an army regardless of its strength.

*Memorial del Estado Mayor, (Colombia)*

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